

Report 11428  
March 1999

**GENCORP**  
**AEROJET**

**Integrated Advanced Microwave Sounding Unit-A  
(AMSU-A)**

**Performance Verification Report**

**Final Comprehensive Performance Test Report**

**P/N 1331720-2-TST, S/N 105/A1**

**Contract No. NAS 5-32314  
CDRL 208**

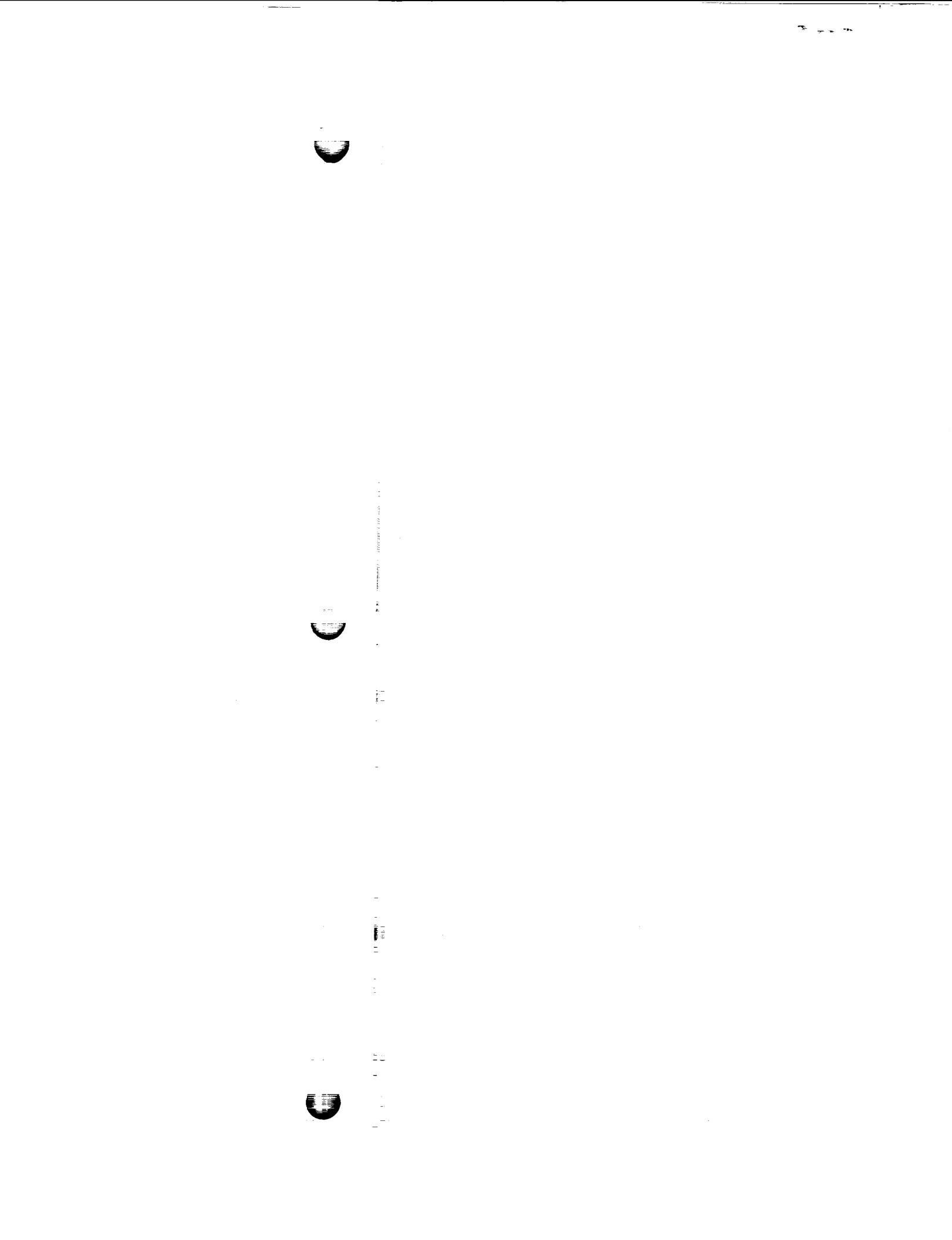
**Submitted to:**

**National Aeronautics and Space Administration  
Goddard Space Flight Center  
Greenbelt, Maryland 20771**

**Submitted by:**

**Aerojet  
1100 West Hollyvale Street  
Azusa, California 91702**

**Aerojet**



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TEST DATA SHEET 1 (Sheet 1 of 9)  
Grounding System Test (Paragraph 3.2.4.1)

J1 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	+28 V MLB	> 100k	> 100k	P
J1-2	+28 V MLB	> 100k		↑
J1-3	+28 V MLB RTN	> 100k		
J1-4	+28 V MLB RTN	> 100k		
J1-5	+28 V PLB	> 100k		
J1-6	+28 V PLB	> 100k		
J1-7	+28 V PLB RTN	> 100k		
J1-8	+28 V PLB RTN	> 100k		
J1-9	+28 V TMB	> 100k		
J1-10	28 V TMB RTN	> 100k		
J1-11	NO CONNECTION	> 100k		↓
J1-12	NO CONNECTION	> 100k	> 100k	
J1-13	CHASSIS GROUND (E1)	< 1	< 1	
J1-14	+28 V MLB	> 100k	> 100k	
J1-15	+28 V MLB	> 100k		↑
J1-16	+28 V MLB RTN	> 100k		
J1-17	+28 V MLB RTN	> 100k		
J1-18	+28 V PLB	> 100k		
J1-19	+28 V PLB	> 100k		
J1-20	+28 V PLB RTN	> 100k		
J1-21	+28 V PLB RTN	> 100k		
J1-22	+28 V TMB	> 100k		
J1-23	28 V TMB RTN	> 100k		
J1-24	SAFETY HTR PWR	> 100k		↓
J1-25	SAFETY HTR RTN	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 2 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

J2 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-1	Chassis Ground (E2)	< 1	< 1	P
J2-2	DATA CLOCK (C1)	> 100k	> 100k	P
J2-3	Signal Return	> 100k	↑	↑
J2-4	No Connection	> 100k		
J2-5	DIGITAL-A DATA OUT	> 100k		
J2-6	DATA ENABLE (A1)	> 100k		
J2-7	8 SEC SYNC PULSE	> 100k		
J2-8	No Connection	> 100k	↓	↓
J2-9	No Connection	> 100k	> 100k	P

J3 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J3-1	1.248 MHz CLK	> 100k	> 100k	P
J3-2	1.248 MHz CLK RTN	> 100k	> 100k	P
J3-3	Chassis GND (E3)	< 1	< 1	P

J5 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J5-1	Chassis Ground (E5)	< 1	< 1	P
J5-2	MODULE PWR IND	> 100k	> 100k	P
J5-3	COLD CAL POS MSB (OUT)	> 100k	↑	↑
J5-4	No Connection	> 100k		
J5-5	SCANNER A1-2 ON/OFF	> 100k		
J5-6	ANT IN COLD CAL POS	> 100k		
J5-7	PLL PRI/RED	> 100k		
J5-8	No Connection	> 100k		
J5-9	SURV HTR ON/OFF	> 100k		
J5-10	No Connection	> 100k		
J5-11	COLD CAL POS LSB (OUT)	> 100k		
J5-12	SCANNER A1-1 ON/OFF	> 100k		
J5-13	ANT IN WARM CAL POS	> 100k		
J5-14	ANT IN NADIR POS	> 100k	↓	↓
J5-15	FULL SCAN MODE	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 3 of 9)  
Grounding System Test (Paragraph 3.2.4.1)

J4 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J4-1	Chassis Ground (E4)	< 1	< 1	P
J4-2	MODULE PWR DISCONN	> 100k	> 100k	P
J4-3	SURVIVAL HTR ON	> 100k	↑	↑
J4-4	MODULE TOTALLY OFF	> 100k		
J4-5	SCANNER A1-2 ON/OFF	> 100k		
J4-6	ANT AT COLD CAL POS	> 100k		
J4-7	PLL SELECT	> 100k		
J4-8	ANT AT NADIR POS	> 100k		
J4-9	COLD CAL POS MSB (IN)	> 100k		
J4-10	No Connection	> 100k		
J4-11	No Connection	> 100k		
J4-12	+10 V INTERFACE BUS	> 100k		
J4-13	10 V INTERFACE BUS RTN	> 100k		
J4-14	MODULE PWR CONN	> 100k		
J4-15	SURVIVAL HTR OFF	> 100k		
J4-16	SCANNER A1-1 ON/OFF	> 100k		
J4-17	ANT AT WARM CAL POS	> 100k		
J4-18	FULL SCAN	> 100k		
J4-19	COLD CAL POS LSB (IN)	> 100k		
J4-20	No Connection	> 100k		
J4-21	No Connection	> 100k		
J4-22	No Connection	> 100k		
J4-23	No Connection	> 100k		
J4-24	+10 V INTERFACE BUS	> 100k	✓	N
J4-25	10 V INTERFACE BUS RTN	> 100k	> 100k	P

**TEST DATA SHEET 1 (Sheet 4 of 9)**  
**Grounding System Test (Paragraph 3.2.4.1)**

J6 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-1	Chassis GND (E6)	< 1	< 1	P
J6-2	RF SHELF A1-1 TEMP	> 100k	↑	↑
J6-3	A1-1 SCAN MTR TEMP	> 100k		
J6-4	WARM LOAD A1-1 TEMP	> 100k		
J6-5	No Connection	> 100k		
J6-6	PLLO RED LOCK DETECT	> 100k		
J6-7	No Connection	> 100k		
J6-8	A1-1 DRIVE MTR CURR	> 100k		
J6-9	+15 V ANT DR MON	> 100k		
J6-10	+5 V ANT DR MON	> 100k		
J6-11	+15 V SIG PROC MON	> 100k		
J6-12	+5 V SIG PROC MON	> 100k		
J6-13	L.O. VOLTAGE CH 3 MON	> 100k		
J6-14	L.O. VOLTAGE CH 5 MON	> 100k		
J6-15	L.O. VOLTAGE CH 7 MON	> 100k		
J6-16	+15 VDC PLL LO MON	> 100k		
J6-17	+10 V MIXER/AMP MON	> 100k		
J6-18	L.O. VOLTAGE CH 15 MON	> 100k		
J6-19	No Connection	> 100k		
J6-20	28 V TMB RTN	> 100k		
J6-21	RF SHELF A1-2 TEMP	> 100k		
J6-22	A1-2 SCAN MTR TEMP	> 100k		
J6-23	WARM LOAD A1-2 TEMP	> 100k		
J6-24	No Connection	> 100k		
J6-25	PLLO PRI LOCK DETECT	> 100k		
J6-26	No Connection	> 100k		
J6-27	A1-2 DRIVE MTR CURR	> 100k		
J6-28	-15 V ANT DR MON	> 100k		
J6-29	-15 V SIG PROC MON	> 100k		
J6-30	L.O. VOLTAGE CH 4 MON	> 100k		
J6-31	L.O. VOLTAGE CH 6 MON	> 100k		
J6-32	L.O. VOLTAGE CH 8 MON	> 100k		
J6-33	-15 VDC PLL LO MON	> 100k		
J6-34	+8 V IF AMP MON	> 100k		
J6-35	No Connection	> 100k	✓	
J6-36	No Connection	> 100k	✓	V
J6-37	No Connection	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 5 of 9)  
Grounding System Test (Paragraph 3.2.4.1)

J7 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J7-1	Chassis GND (E7)	< 1	< 1	P
J7-2	No Connection	> 100k	> 100k	P
J7-3	REDUN PLO LOCK DET	> 100k	A	A
J7-4	15 V RTN (2/3)	> 100k		
J7-5	15 V RTN (2/3)	> 100k		
J7-6	DUMP TEST POINT	> 100k		
J7-7	No Connection	> 100k		
J7-8	CH3 OUT TEST POINT	> 100k		
J7-9	CH4 OUT TEST POINT	> 100k		
J7-10	CH5 OUT TEST POINT	> 100k		
J7-11	CH6 OUT TEST POINT	> 100k		
J7-12	CH7 OUT TEST POINT	> 100k		
J7-13	CH8 OUT TEST POINT	> 100k		
J7-14	CH9 OUT TEST POINT	> 100k		
J7-15	No Connection	> 100k		
J7-16	No Connection	> 100k		
J7-17	GSE CMD LSB	> 100k		
J7-18	GSE CMD MSB-1	> 100k		
J7-19	+5 V GSE INTERLOCK A	> 100k		
J7-20	No Connection	> 100k		
J7-21	No Connection	> 100k		
J7-22	PRI PLO LOCK DET	> 100k		
J7-23	No Connection	> 100k		
J7-24	I/H TEST POINT	> 100k		
J7-25	No Connection	> 100k		
J7-26	15 V RTN (2/3)	> 100k		
J7-27	CH10 OUT TEST POINT	> 100k		
J7-28	CH11 OUT TEST POINT	> 100k		
J7-29	CH12 OUT TEST POINT	> 100k		
J7-30	CH13 OUT TEST POINT	> 100k		
J7-31	CH14 OUT TEST POINT	> 100k		
J7-32	CH15 OUT TEST POINT	> 100k		
J7-33	No Connection	> 100k		
J7-34	No Connection	> 100k		
J7-35	GSE CMD MSB	> 100k	V	V
J7-36	5 V RTN (1)	> 100k		
J7-37	+5 V GSE INTERLOCK B	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 6 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	J1-2	+28 V MLB	< 1	< 1	P
J1-1	J1-14	+28 V MLB	< 1	< 1	A
J1-1	J1-15	+28 V MLB	< 1		
J1-3	J1-4	28 V MLB RTN	< 1		
J1-3	J1-16	28 V MLB RTN	< 1		
J1-3	J1-17	28 V MLB RTN	< 1		
J1-5	J1-6	+28 V PLB	< 1		
J1-5	J1-18	+28 V PLB	< 1		
J1-5	J1-19	+28 V PLB	< 1		
J1-7	J1-8	28 V PLB RTN	< 1		
J1-7	J1-20	28 V PLB RTN	< 1		
J1-7	J1-21	28 V PLB RTN	< 1		
J1-9	J1-22	+28 V TMB	< 1		
J1-10	J1-23	28 V TMB RTN	< 1		
J1-10	J6-20	28 V TMB RTN	< 1		
J4-12	J4-24	+10 V INTERFACE BUS	< 1		
J4-13	J4-25	10 V INTERFACE BUS RTN	< 1	< 1	
J1-1	J1-3	+28 V MLB	> 100k	> 100k	
J1-1	J1-5	+28 V MLB	> 100k		
J1-1	J1-7	+28 V MLB	> 100k		
J1-1	J1-9	+28 V MLB	> 100k		
J1-1	J1-10	+28 V MLB	> 100k		
J1-1	J1-24	+28 V MLB	> 100k		
J1-1	J1-25	+28 V MLB	> 100k		
J1-1	J2-3	+28 V MLB	> 100k		
J1-1	J4-12	+28 V MLB	> 100k		
J1-1	J4-13	+28 V MLB	> 100k		
J1-3	J1-5	28 V MLB RTN	> 100k		
J1-3	J1-7	28 V MLB RTN	> 100k		
J1-3	J1-9	28 V MLB RTN	> 100k		
J1-3	J1-10	28 V MLB RTN	> 100k		
J1-3	J1-24	28 V MLB RTN	> 100k		
J1-3	J1-25	28 V MLB RTN	> 100k		
J1-3	J2-3	28 V MLB RTN	> 100k		
J1-3	J4-12	28 V MLB RTN	> 100k		
J1-3	J4-13	28 V MLB RTN	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 7 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-5	J1-7	+28 V PLB	> 100k	> 100k	P
J1-5	J1-9	+28 V PLB	> 100k	/	A
J1-5	J1-10	+28 V PLB	> 100k	/	
J1-5	J1-24	+28 V PLB	> 100k	/	
J1-5	J1-25	+28 V PLB	> 100k	/	
J1-5	J2-3	+28 V PLB	> 100k	/	
J1-5	J4-12	+28 V PLB	> 100k	/	
J1-5	J4-13	+28 V PLB	> 100k	/	
J1-7	J1-9	28 V PLB RTN	> 100k	/	
J1-7	J1-10	28 V PLB RTN	> 100k	/	
J1-7	J1-24	28 V PLB RTN	> 100k	/	
J1-7	J1-25	28 V PLB RTN	> 100k	/	
J1-7	J2-3	28 V PLB RTN	> 100k	/	
J1-7	J4-12	28 V PLB RTN	> 100k	/	
J1-7	J4-13	28 V PLB RTN	> 100k	/	
J1-9	J1-10	+28 V TMB	> 100k	/	
J1-9	J1-24	+28 V TMB	> 100k	/	
J1-9	J1-25	+28 V TMB	> 100k	/	
J1-9	J2-3	+28 V TMB	> 100k	/	
J1-9	J4-12	+28 V TMB	> 100k	/	
J1-9	J4-13	+28 V TMB	> 100k	/	
J1-10	J1-24	28 V TMB RTN	> 100k	/	
J1-10	J1-25	28 V TMB RTN	> 100k	/	
J1-10	J2-3	28 V TMB RTN	> 100k	/	
J1-10	J4-12	28 V TMB RTN	> 100k	/	
J1-10	J4-13	28 V TMB RTN	> 100k	/	
J1-24	J1-25	SAFETY HTR PWR	> 100k	/	
J1-24	J2-3	SAFETY HTR PWR	> 100k	/	
J1-24	J4-12	SAFETY HTR PWR	> 100k	/	
J1-24	J4-13	SAFETY HTR PWR	> 100k	/	
J1-25	J2-3	SAFETY HTR PWR RTN	> 100k	/	
J1-25	J4-12	SAFETY HTR PWR RTN	> 100k	/	
J1-25	J4-13	SAFETY HTR PWR RTN	> 100k	/	
J2-3	J4-12	SIGNAL RTN	> 100k	/	
J2-3	J4-13	SIGNAL RTN	> 100k	V	V
J4-12	J4-13	+10 V INTERFACE BUS	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 8 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-2	J4-13	DATA CLOCK (C1)	> 2k	> 2k	P
J2-5	J4-13	DIGITAL-A DATA OUT	> 2k		
J2-6	J4-13	DATA ENABLE (A1)	> 2k		
J2-7	J4-13	8 SEC SYNC PULSE	> 2k		
J3-1	J4-13	1.248 MHZ CLK	> 2k		
J3-2	J4-13	1.248 MHZ CLK RTN	> 2k		
J4-2	J4-13	MODULE PWR DISCONN	> 2k		
J4-3	J4-13	SURVIVAL HTR ON	> 2k		
J4-4	J4-13	MODULE TOTALLY OFF	> 2k		
J4-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J4-6	J4-13	ANT AT COLD CAL POS	> 2k		
J4-7	J4-13	PLL SELECT	> 2k		
J4-8	J4-13	ANT AT NADIR POS	> 2k		
J4-9	J4-13	COLD CAL POS MSB (IN)	> 2k		
J4-14	J4-13	MODULE PWR CONN	> 2k		
J4-15	J4-13	SURVIVAL HTR OFF	> 2k		
J4-16	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J4-17	J4-13	ANT AT WARM CAL POS	> 2k		
J4-18	J4-13	FULL SCAN	> 2k		
J4-19	J4-13	COLD CAL POS LSB (IN)	> 2k		
J5-2	J4-13	MODULE PWR IND	> 2k		
J5-3	J4-13	COLD CAL POS MSB (OUT)	> 2k		
J5-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J5-6	J4-13	ANT IN COLD CAL POS	> 2k		
J5-7	J4-13	PLL PRI/RED	> 2k		
J5-9	J4-13	SURV HTR ON/OFF	> 2k		
J5-11	J4-13	COLD CAL POS LSB (OUT)	> 2k		
J5-12	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J5-13	J4-13	ANT IN WARM CAL POS	> 2k		
J5-14	J4-13	ANT IN NADIR POS	> 2k		
J5-15	J4-13	FULL SCAN MODE	> 2k		▼

TEST DATA SHEET 1 (Sheet 9 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-2	J1-10	RF SHELF A1-1 TEMP	> 2k	>2k	P
J6-3	J1-10	A1-1 SCAN MTR TEMP	> 2k		
J6-4	J1-10	WARM LOAD A1-1 TEMP	> 2k		
J6-6	J4-13	PLLO RED LOCK DETECT	> 2k		
J6-8	J4-13	A1-1 DRIVE MTR CVR	> 2k		
J6-9	J4-13	+15 VDC ANT DRIVE MON	> 2k		
J6-10	J4-13	+5 VDC ANT DRIVE MON	> 2k		
J6-11	J4-13	+15 VDC SIG PROC MON	> 2k		
J6-12	J4-13	+5VDC SIG PROC MON	> 2k		
J6-13	J4-13	L.O. VOLTAGE CH3 MON	> 2k		
J6-14	J4-13	L.O. VOLTAGE CH5 MON	> 2k		
J6-15	J4-13	L.O. VOLTAGE CH7 MON	> 2k		
J6-16	J4-13	+15 VDC PLL LO MON	> 2k		
J6-17	J4-13	+10 V MIXER/AMP MON	> 2k		
J6-18	J4-13	L.O. VOLTAGE CH15 MON	> 2k		
J6-21	J4-10	RF SHELF A1-2 TEMP	> 2k		
J6-22	J4-10	A1-2 SCAN MTR TEMP	> 2k		
J6-23	J4-10	WARM LOAD A1-2 TEMP	> 2k		
J6-25	J4-13	PLLO PRI LOCK DETECT	> 2k		
J6-27	J4-13	A1-2 DRIVE MTR CURR	> 2k		
J6-28	J4-13	-15 VDC ANT DRIVE MON	> 2k		
J6-29	J4-13	-15 VDC SIG PROC MON	> 2k		
J6-30	J4-13	L.O. VOLTAGE CH4 MON	> 2k		
J6-31	J4-13	L.O. VOLTAGE CH6 MON	> 2k		
J6-32	J4-13	L.O. VOLTAGE CH8 MON	> 2k		
J6-33	J4-13	-15 VDC PLL LO MON	> 2k		
J6-34	J4-13	IF AMP MON	> 2k		↓

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hall 3/16/99 Test Systems Engineer Date

Customer Representative  
(Flight Hardware Only)

Date

D. Wallace 3-16-99 Quality Control Date

10 Mar 95

**TEST DATA SHEET 2**  
**+28 MLB During Turn-on Transient (Paragraph 3.2.4.2.1.1)**

At 28.56 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	237.2 ms	20 ms max	300 ms max	P
8	Peak Current	4.61 Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	76.37 mA/μs	677 mA/μs	250 mA/μs	P

At 27.44 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	242.7 ms	20 ms max	300 ms max	P
8	Peak Current	4.156 Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	68.09 mA/μs	677 mA/μs	250 mA/μs	P

At 28.00 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	253.6 ms	20 ms max	300 ms max	P
8	Peak Current	4.495 Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	60.96 mA/μs	677 mA/μs	250 mA/μs	P

\* Refer to Figure 5.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

3-16-99

Customer Representative  
(Flight Hardware Only)

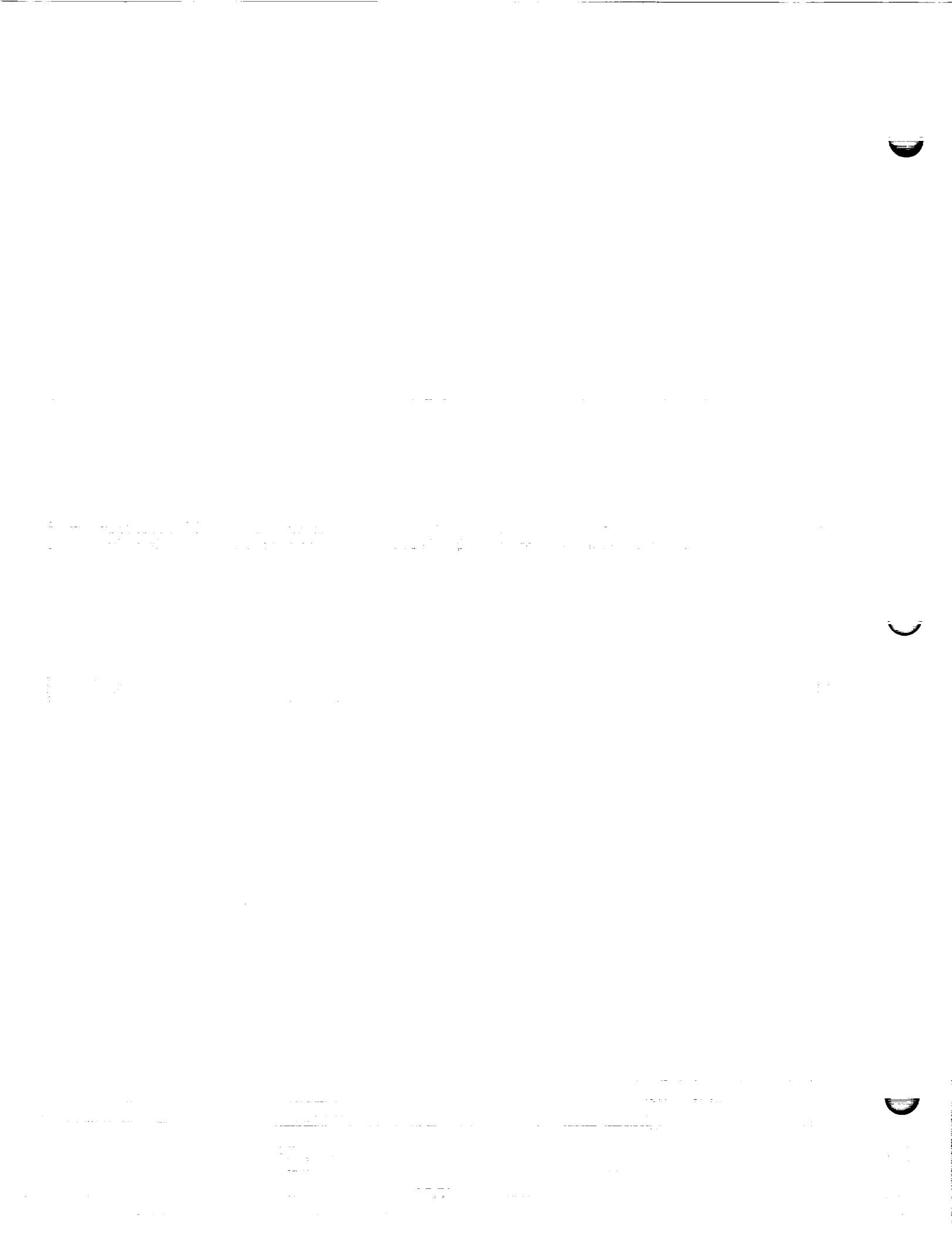
Date

Test Systems Engineer  
3-16-99

Date

Quality Control

Date

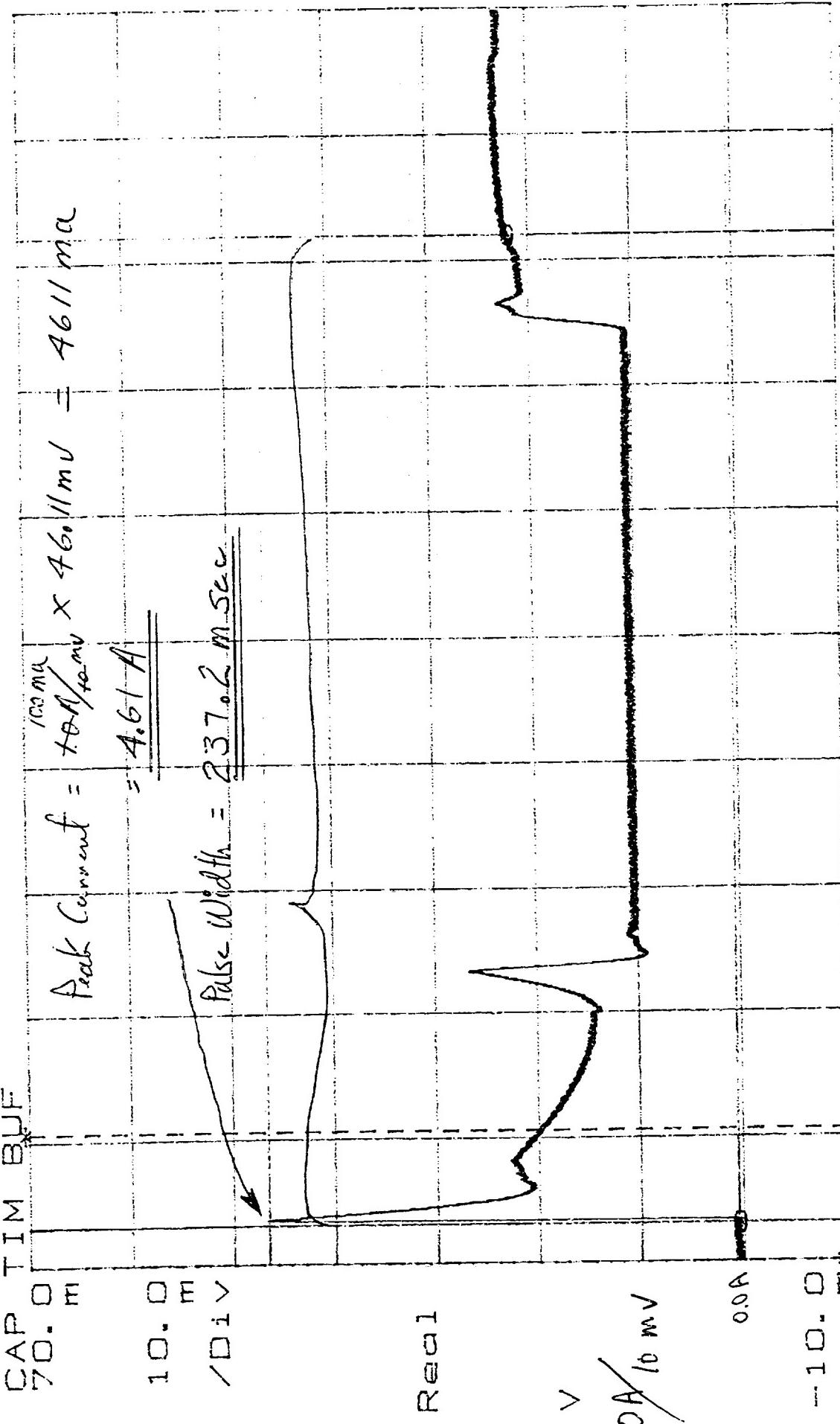


$$X_a = 246 \cdot 4 \text{ mS} \quad \Delta X_a = 237 \cdot 2 \text{ mS}$$

CAP TIM BUF

$$Y_a = 21 \cdot 8994 \text{ m} \quad \Delta Y_a = 21 \cdot 59 \text{ mV}$$

$$\gamma = 46 \cdot 5333 \text{ m} \quad \Delta \gamma = 46 \cdot 11 \text{ mV}$$



SC: 373234  
PN: 1331120-2

32.4.2.1.1. MLB +28.56 V Sec

300 m

TURN-ON-TRANSIENT Test Engi

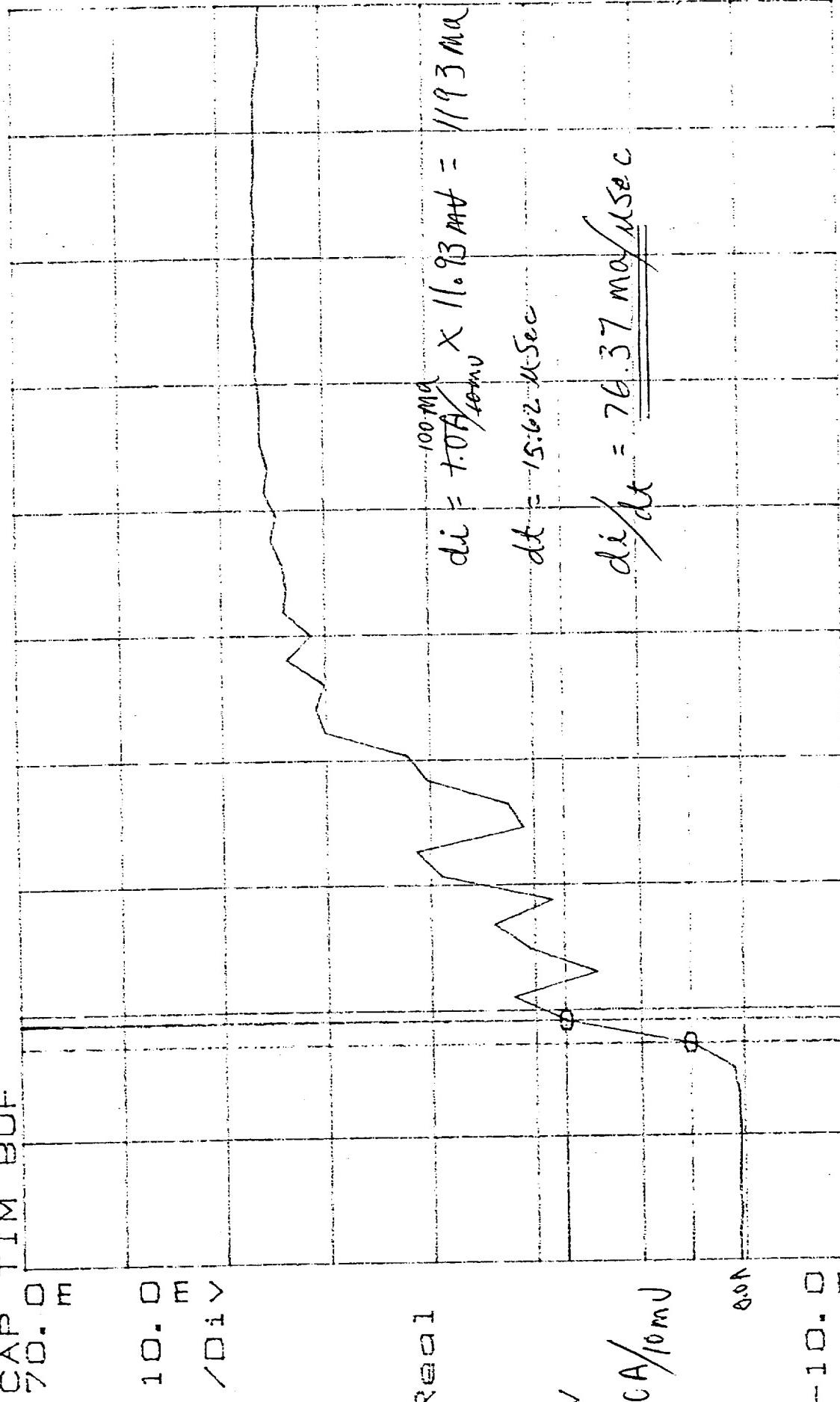
Date: 3-26-99

Quality Form

Signature

$$X=10: 22^m 5^s \quad \Delta X = 15^m 62^s \\ Y_\alpha = 12^h 36^m 7^s \quad \Delta Y_\alpha = 1^h 1^m 9^s$$

$\gamma = 5$ ,  $17576m$ ,  $A_y = 11$ ,  $93mV$



100

J.C.A./10mJ

-10-

5/6, 373234

四〇

28,561 See

四〇

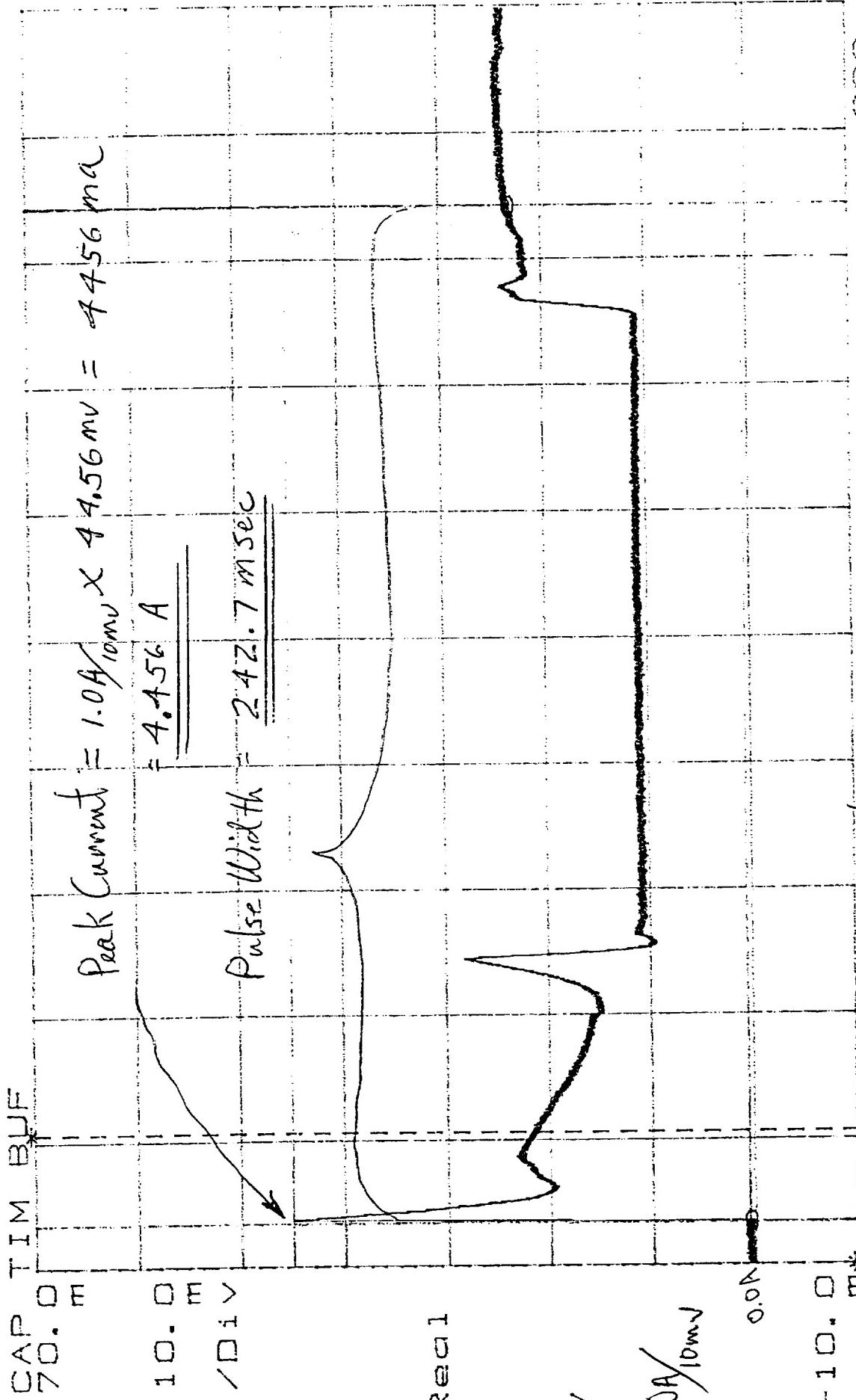
Oct. 21, 1969

DN: 1331702-2 - SN: 105

$X = 10.17 \text{ mS}$     $\Delta X = 242$ :  $7 \text{ mS}$

$Y_a = 35.9.007 \mu$     $\Delta Y_a = 22$ :  $82 \text{ mV}$

CAP TIM BUF



SN: 573234   SD: 133120-2   TDS: 2

Model: MLB TURN-ON - TRANSIENT   Date: 3/16/99

Quality: Good

Secs  
Test Eng'

AVG  
8  
SEAT

3000m

$X = 10 \cdot 72mS$   $\Delta X = 31.25\mu S$   $\gamma = 2.31515m$   $\Delta \gamma = 21.23mV$

$\gamma_a = 2.56434m$   $\Delta \gamma_a = 21.08mV$   
CAP TIM BUF  
 $70.0 \text{ m}$

$10.0 \text{ m}$   
 $/D i V$

Real

$1.0 A / 10mV$

$$\frac{di}{dt} = 68.09 \text{ mA/msec}$$

$$di = 1.0A / \text{msec} \times 21.25 \text{ mV}$$

$$= 2128 \text{ mA}$$

$$dt = 31.25 \text{ msec}$$

$F_x: 4.4 \text{ V}$   $10.0 \text{ m}$   $32.421 + 27.44 \text{ V}$   
 $S/N: 3732.34$   $\text{MLB Turn-on } di/dt$   
 $P/N: 1331700.2 - SN: 105$   $TDS-2$

11. 2m  
Date: 3-16-99  
Test Eng: AMSU-B  
Quality: 197

$X = 263.4 \text{ ms}$   $\Delta X = 253.6 \text{ ms}$   $\Delta Y = 45.4667 \text{ mV}$

$Y = 22.7713 \text{ m}$   $\Delta Y = 22.31 \text{ mV}$

CAP TIM BUF

$$\text{peak Current} = \frac{100 \text{ mA}}{10 \text{ ms}} \times 4.95 \text{ ms} = 4.95 \text{ mA}$$

$$= 4.95 \text{ A}$$

$$\text{Pulse Width} = 253.6 \text{ msec}$$

10.0  
m  
A  
di V

Real

1.0 A/  
10msV

-10.0  
m  
A  
di V

Fx dXY 0.0 324.21.1 +28.00 V  
MLB TURN-ON-TURNDOWN Test End  
S/N: 313284 SN: 105 TDS-2  
E/W: 1331100-2 Date: 3-16-99  
Quality: 3.1689

Sec

Test End

Turn

On

Off

Turn

Off

On

Turn

On

Turn

Off

300m

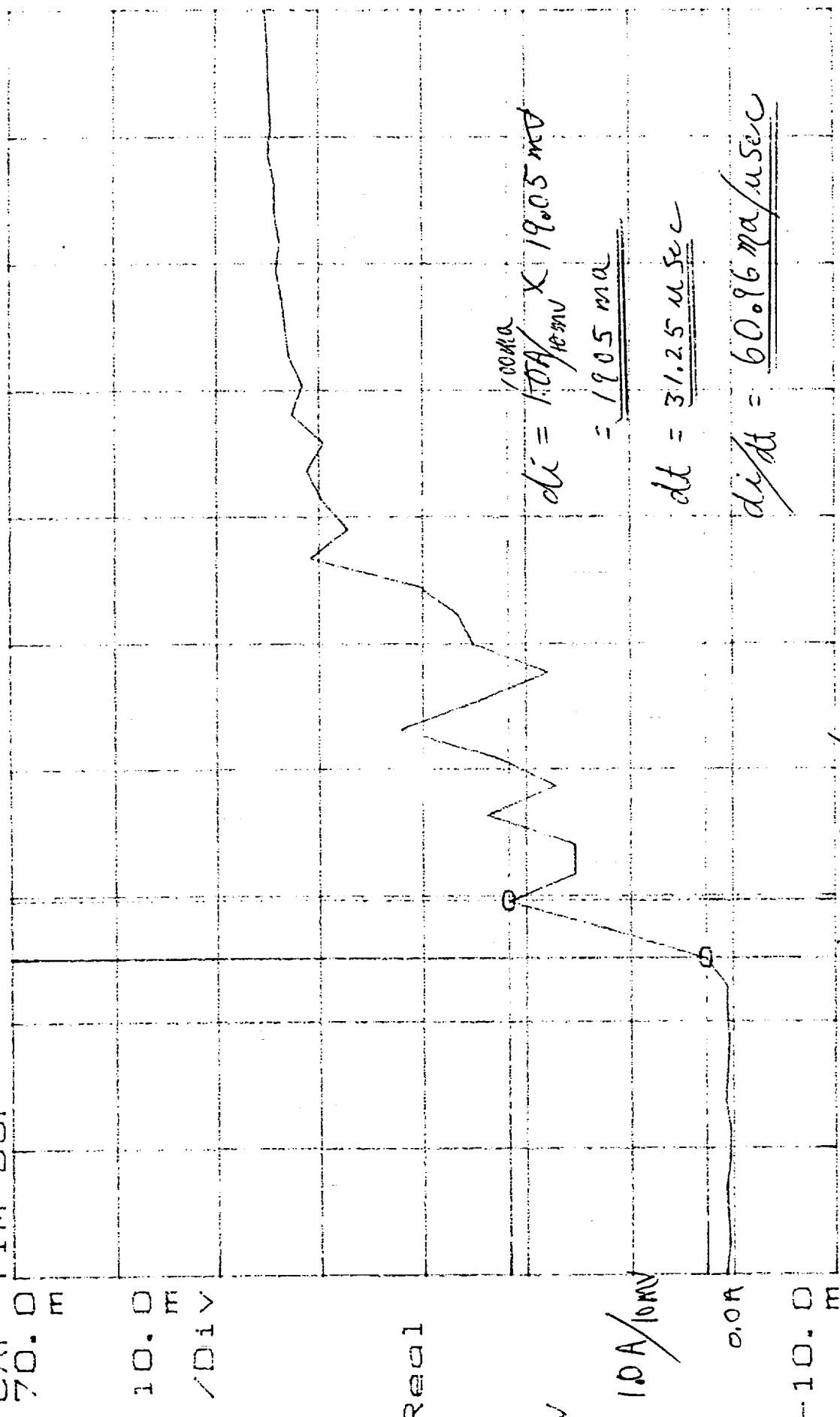
300m

300m

300m

300m

$X = 121.55m$   $\Delta X = 31.25m$   $\Delta Y = 19.05m$   $\Delta Y = 19.05m$



5/10: F x d X Y 10. 3m 3  
8732-34  
5/10: 1331700-2 = ML  
5M: 105

TDSS-7  
N-ON diff't  
 $+28.00V$

Test Eng'g  Quality

Date: 3-16-94

TEST DATA SHEET 3  
+28 MLB Operating Power (Paragraph 3.2.4.2.1.2)

Step	+28V MLB at 27 Volts	Measured	Units	Required	Pass/Fail
2	+28 V MLB voltage at 27 V ( $V_b$ ) (Measured)	27.01 ✓	Volts	$27.0 \pm 0.1$	P
3	Average Current ( $I_V$ ) (PLO #1)	2.34 A	Amps	N/A	N/A
4	+28 V MLB bus power = $I_V \times V_b$ (PLO#1)	63.2 W	Watts	82 W max	F

+28 V MLB at 28 Volts

5	+28 V MLB Bus Voltage at 28 V ( $V_b$ ) (Measured)	28.01 ✓	Volts	$28.0 \pm 0.1$	P
6	Average Current ( $I_V$ ) (PLO#1)	2.26 A	Amps	N/A	N/A
7	+28 V MLB Operating Power = $I_V \times V_b$ (PLO#1)	63.3 W	Watts	82 W max	P

+28 V MLB at 29 Volts

8	+28 V MLB voltage at 29 V ( $V_b$ ) (Measured)	29.01 ✓	Volts	$29.0 \pm 0.1$	P
9	Average Current ( $I_V$ ) (PLO#1)	2.16 A	Amps	N/A	N/A
10	+28 V MLB operating power = $I_V \times V_b$ (PLO#1)	63.2 W	Watts	82 W max	F

6	AVERAGE CURRENT ( $I_V$ ) (PLO#2)	2.34 A	AMPS	N/A	N/A
7	+28V MLB bus power = $I_V \times V_b$ (PLO#2)	63.2 W	Watts	82 W max	P

13	AVERAGE CURRENT ( $I_V$ ) (PLO#2)	2.28 A	AMPS	N/A	N/A
14	+28V MLB bus power = $I_V \times V_b$ (PLO#2)	63.8 W	Watts	82 W max	P

20	Average Current ( $I_V$ ) (PLO#2)	2.2 A	AMPS	N/A	N/A
21	+28V MLB bus power = $I_V \times V_b$ (PLO#2)	63.8 W	Watts	82 W max	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

AMSU  
6  
S/N 105

3-17-99

Test Systems Engineer A  
200

MAR 17 1999

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

1

2

3

TEST DATA SHEET 4 (Sheet 1 of 2)  
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.1-3.2.4.2.2.5)6 RRD Platt  
3/16/99

Paragraph	Parameter	Measured or Calculated	Required	Pass/ Fail
3.2.4.2.2.1 From -0.1 to two seconds				
	Peak Current = $I_p$	1.1 Amps	1.3 amps max	P
3.2.4.2.2.2 From 2 to 4 seconds				
	Peak Current = $I_p$	1.09 Amps	1.3 amps max	P
3.2.4.2.2.3 From 4 to 6 seconds				
	Peak Current = $I_p$	1.087 Amps	1.3 amps max	P
3.2.4.2.2.4 From 6 to 8 seconds				
	Peak Current = $I_p$	1.073 Amps	1.3 amps max	P
3.2.4.2.2.5 Eight Sec. Integrated Current Measurement:				
	Current	104.77 mA	None	P
3.2.4.2.2.6 Turn-on Transient:				
	$dI/dT$	310.2 mA/ $\mu$ s	744 mA/ $\mu$ s *	P
	Peak Current = $I_p$	8.18 Amps	11.5 Amps	A

\* Refer to Figure 9.

Bus current during the I/H, D period

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.1	From -0.1 to 2 secs	13.57 mA	N/A
3.2.4.2.2.2	From 2 to 4 secs	11.62 mA	N/A
3.2.4.2.2.3	From 4 to 6 secs	9.69 mA	N/A
3.2.4.2.2.5	From 6 to 8 secs	13.57 mA	N/A

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

AMBU  
B  
SEIT

3-7-99

Test Systems Engineer

7A  
200

MAR 7 1999

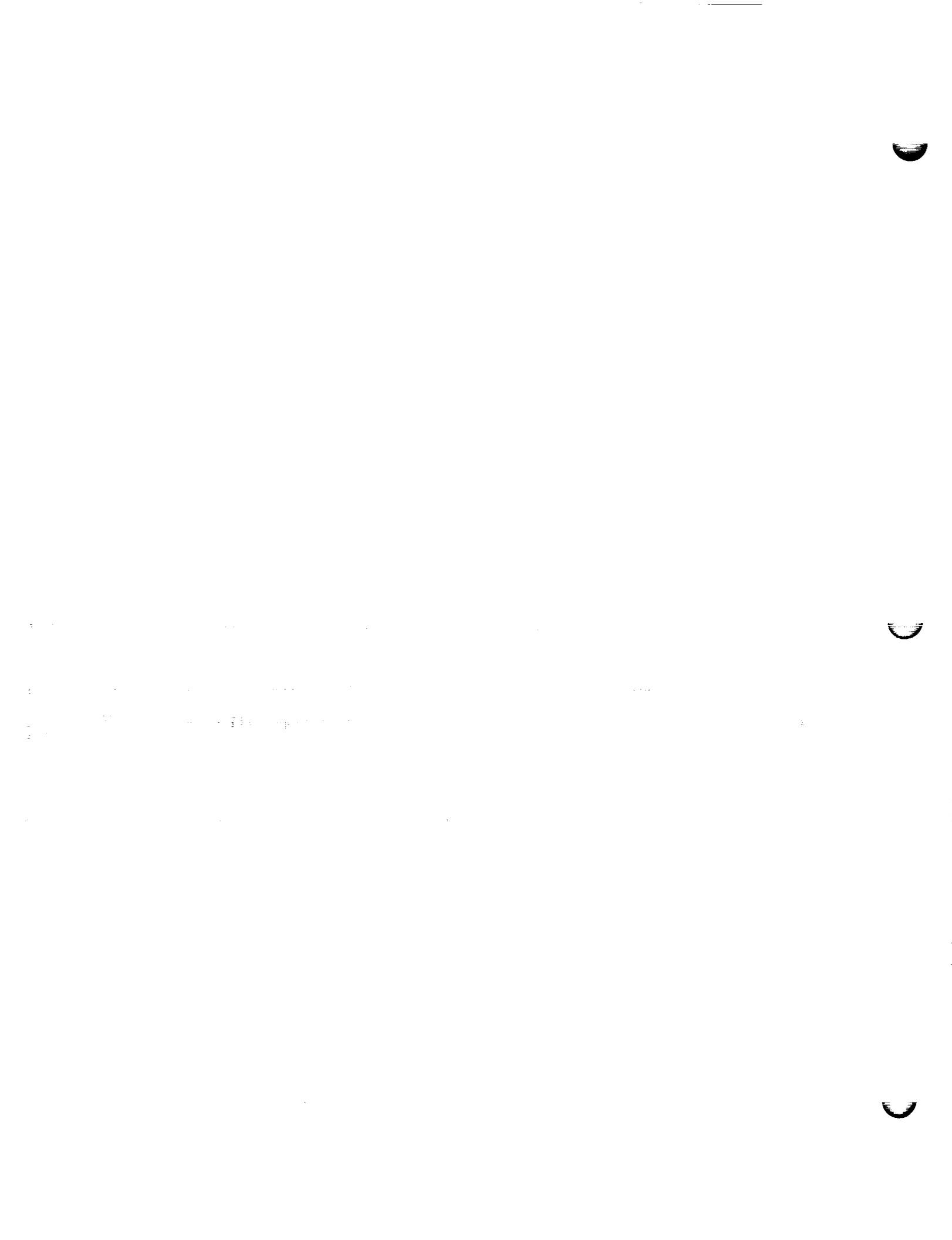
Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



X=996. 1mSec  
Y=55. 0274mV  
CAP TIM BUF

$\Delta V = -254. 554 \text{ mV}$   
 $\Delta V = -678. 8 \mu\text{V}$   
Peak Current  $\pm 200 \text{ mA}$   
 $\mp \sqrt{1.1 \text{ A}}$

10. 0

100mV

Recal

200mA/10mV

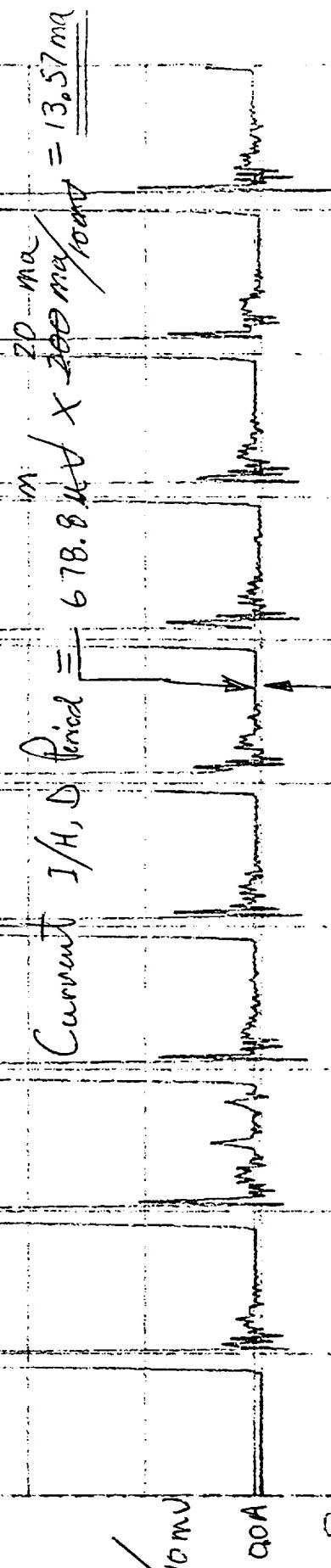
00A

-10. 0

Fx4Xy 0. 0

516: 373234

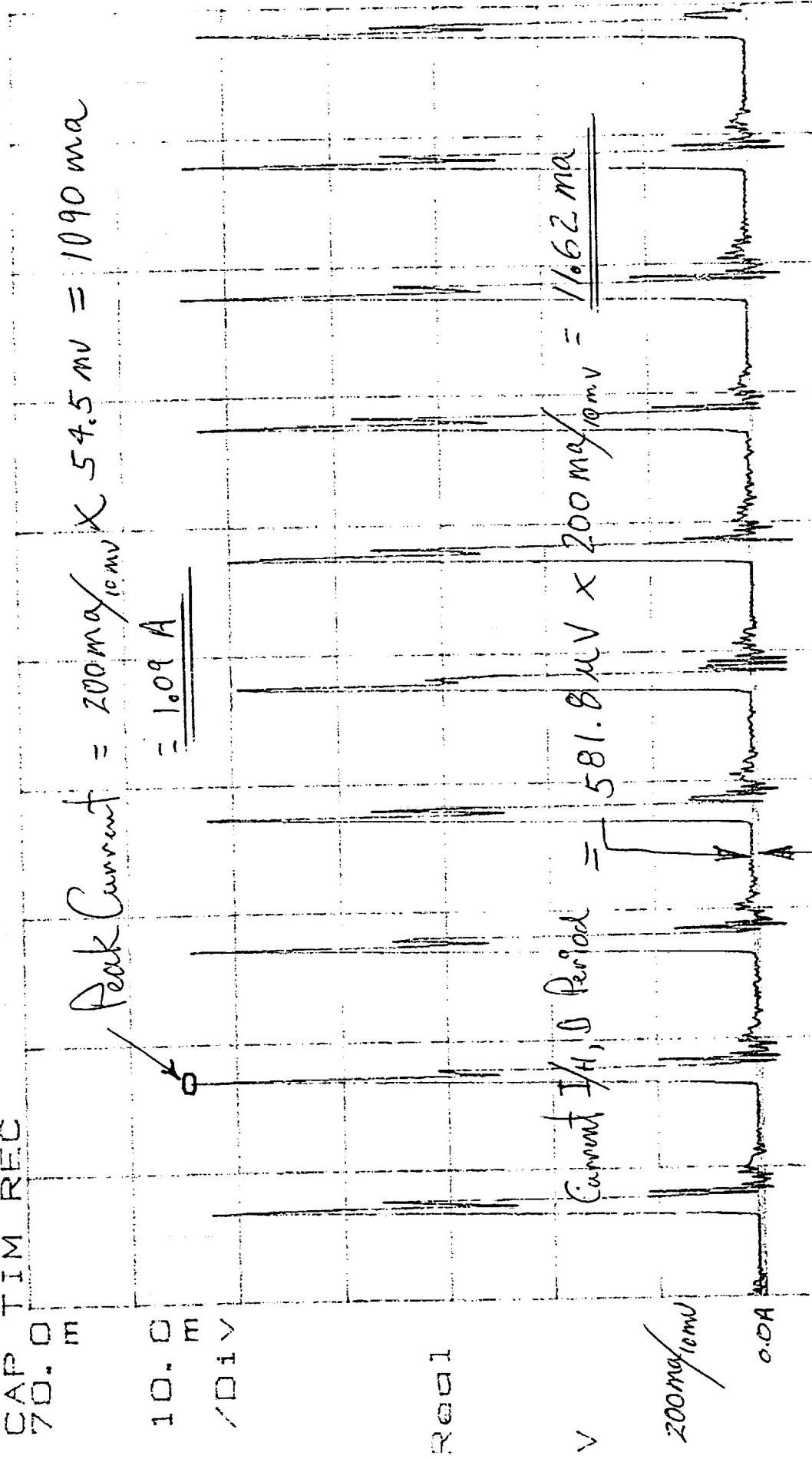
PLB I/H, D Current T05-4 Test Eng. <sup>831</sup>  
PN: 1331700-2 SW: 105 Peak Current Qualtr. A<sub>202</sub> MAR 17 1999



Date: 3-16-99

X = 2.3414 Sec  
Y<sub>a</sub> = 54.5313mV  
Cap. Tim Rec  
70.0 m

$\gamma = -254.55 \mu$   $\Delta Y = 581.8 \mu V$



4. C

3.24.222 2-4 Sec Specs

PLB I/H, D Current Test End

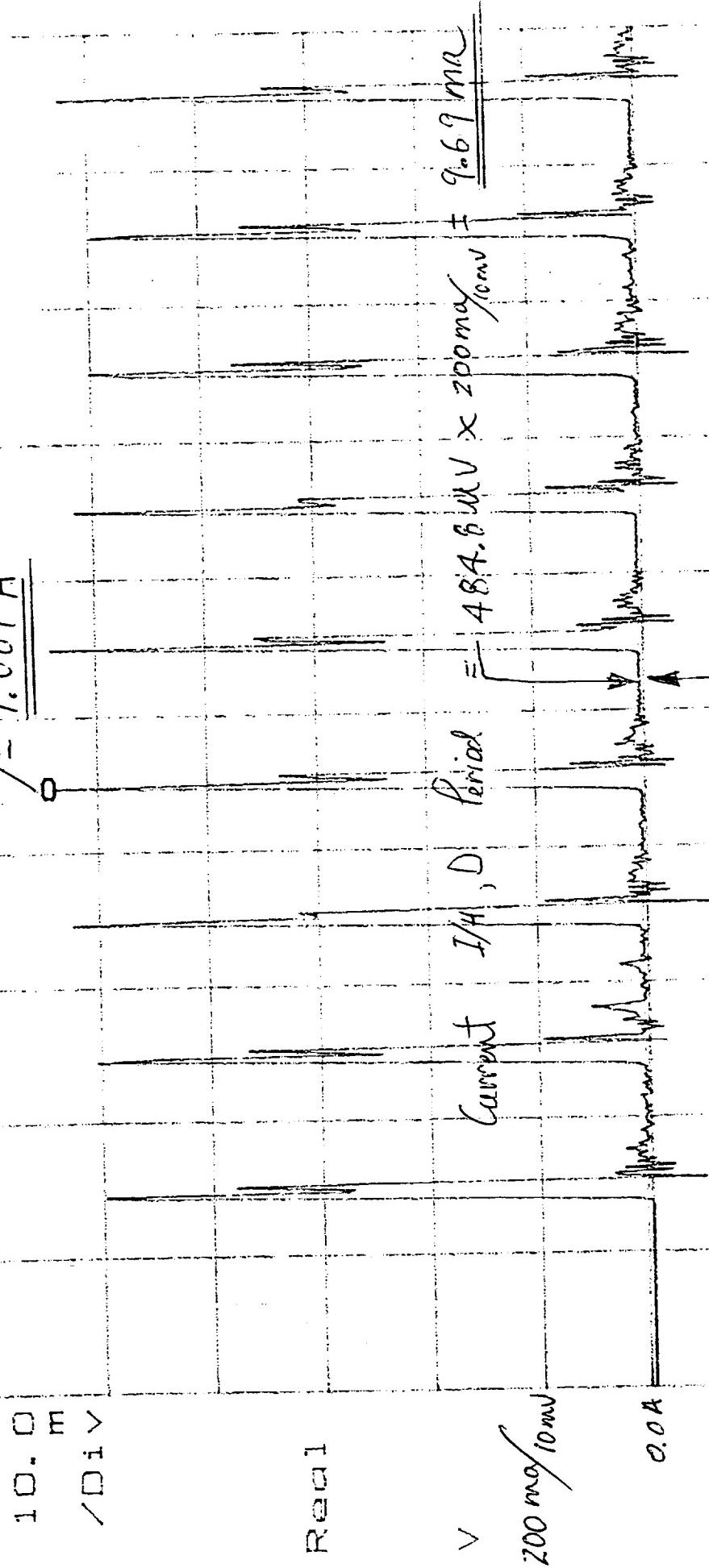
5/6: 373234

P/N: 1331720-2 SN: 1025

Quality: 7A 200

Date: 3-16-99

X = 4.8961 Sec  
Y = 54.372 mV  
CAP TIM REC  
70.0 m



$$\gamma = 375, 757 \mu \Delta Y = 484, 84 \nu$$

$$\text{Peak Current} = \frac{200 \text{ mA}}{10 \text{ ms}} \times 54.37 \text{ mV} = 1087 \text{ A}$$

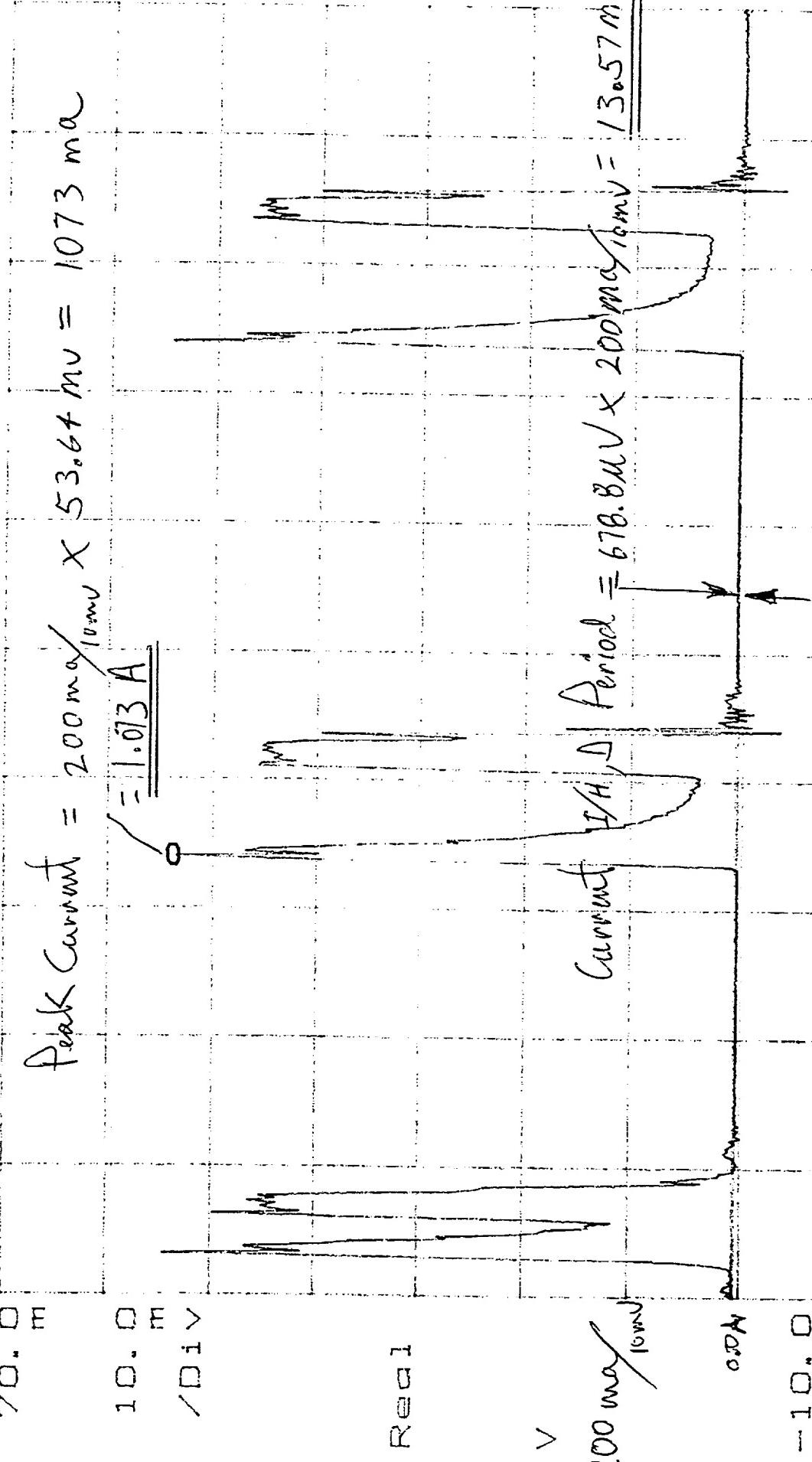
Date : 3-16-99  
G. C.  
Test Eng : (AMBU B SENT)  
Qualif : 003 MAR : 1999  
12

5/10: 3732.34 SN: 105  
 1331700-2  
 H-X-Y 4.0 324-22.8 4-6 sec Sec  
PLB 1/4, D Current TDS-4 Tel  
 Peak Current

$X = 6.6812 \text{ sec}$   
 $Y_d = 5.3.6492 \text{ mV}$   
 CAP TIM BUF  
 70.0 M

$\gamma = -4.96. 97.2 \Delta Y = 678. 8 \mu\text{V}$

Peak Current  $= 200 \text{ mA} \times 53.64 \text{ mV} = 1073 \text{ mA}$   
 $\therefore = 1.073 \text{ A}$



Freqd XY 6.0 3.2.4.2.2.4 6 - 8 Sec Sec  
PLB 1/H. S Current  
 Peak Current TA5.4 Test Eng : (800)  
 SN: 1531720-2 Date: 3-10-99  
 P/N: 573234 Qualit: 002 MAR 1 '99

E. D.  
 Date: 3-10-99  
 Qualit: b2 MAR 1 '99

X = 2.8203 Sec  
Y = 55.228mV  
CAP TIM BUF  
70.0 m

10.0 m  
/D i v

Recal

V

200ms/low

0.0A

-10.0 m

F xcl Y 0.0

3.2.4. 2.2.5

Integrated Current

TD5-4

SW 10.5

S/N: 373234

P/N: 1331700-2

Sec

Test Eng

AMM 8 sec

3.

Date: 3-17-99

Dualitr: 200 MAR 17 1999

X = 7.9961 sec  
Y = 41.9108 mV

M: CAP T/TIM REC  
70.0 m

$$\text{Current} = \frac{20 \text{ mA}}{200 \text{ mV}} \times 41.91 \text{ mV} = 838.2 \text{ mA}$$

$$\text{Ave Current} = \frac{\text{Current}}{8 \text{ sec}} = \underline{\underline{104.77 \text{ mA}}}$$

10.0 m

10mV

Real

V

200mA / 10mV

0.0A

-10.0 m

Fwd Y

32.1.2.2.5

Integrated Current

TDS-4

S/N: 1331720-2 SN: 105

FA: 373234

8 sec

Sec

8. 0

Test Eng: (8 sec)

Date: 3-7-99

Qualif: TA  
200 MAR 17 1989

$\gamma = 472.724 \mu$   $\Delta\gamma = 409.0 \text{ mV}$

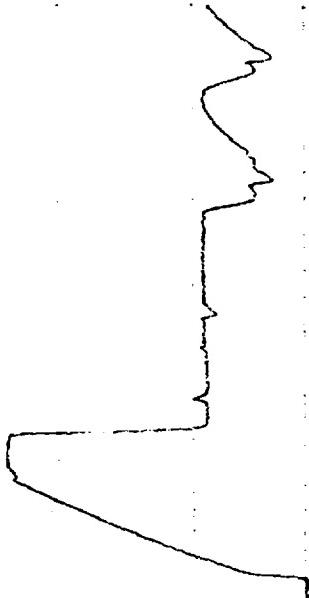
CAP TIME BLUF  
472.724

200.0 mV

$$\begin{aligned}\text{Peak Current} &= 200 \text{ mA}/10 \text{ mV} \times 409.0 \text{ mV} \\ &= 8180 \text{ mA} \\ &= \underline{\underline{8.18 A}}\end{aligned}$$

Ref 1

200 mA/10mV



S/N: 373234 P/N: 1331720 SN: 105 TDS-4  
Fix: 4X Y D. O. 2.2 x 2.2.6 PLB TURN-ON TRANSIENT

- 0.0A 0.0A

Scal: 200 A/B 200 A/B  
Test Eng: Date: 3-17-99

Qualit: 7A MAR 17 1999

$$X = 10.17 \text{ mS} \quad \Delta X = 15.62 \mu\text{s} \quad Y = 62.727 \text{ m} \quad \Delta Y = 242.1 \text{ mV}$$

CAP TIM BUFE  
470 m

50.0 m  
Div

### Result

$$\frac{di}{dt} = \frac{20 \text{ mA}}{200 \text{ ms}} = 100 \text{ mA/ms}$$

$$dt = 15.62 \text{ us}$$

$$\frac{di}{dt} = \frac{20 \text{ mA}}{15.62 \text{ us}} = 1300 \text{ mA/us}$$

$$200 \text{ mA/ms}$$

56: 373234  
7N: 1331720

PLB Taken-on  
TS5-4

PLB Test Eng: 324.22.6

Serial No: 7A 200 MAR 1999

Test Eng: 324.22.6

Date: 3-17-99

Qualif: 7A MAR 1999

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 4 (Sheet 2 of 2)  
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.6)

3/17/99  
AMSU  
TO  
SET

Bus current during warm cal, cold cal & Nadir

Paragraph 7	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.6(2)	Warm cal	11.19 mA	N/A
3.2.4.2.2.6(3)	Cold cal	11.21 mA	N/A
3.2.4.2.2.6(4)	Nadir	19.06 mA	N/A
3.2.4.2.2.7(5)	WARM CAL (MOTORS OFF)	0.01 mA	N/A

3-17-99

51  
0C

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: 373234      S/N: 105

AMSU  
B  
SET

3-17-99

Test Systems Engineer

Date

200  
7A  
MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-117 A1-EXE;62 WARM CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

COMMANDS  
[ 9 ] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = NO [ 15 ]  
[ 10 ] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = NO [ 16 ]  
[ 11 ] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = NO [ 17 ]  
[ 12 ] SCANNER A1 - 1 POWER = OFF PLL POWER = PLL # 1 [ 18 ]  
[ 13 ] SCANNER A1 - 2 POWER = OFF COLD CAL POSITION MSB = ZERO [ 19 ]  
[ 14 ] ANTENNA IN WARM CAL POSIT = YES COLD CAL POSITION LSB = ZERO [ 20 ]  
POWER [ 4 ] ON SCREEN ONLY .[ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 3

3.2.4.2.2.7 Step 6 TD5-4

PLB Bus Current  
WARM CAL  
MOTORS OFF

S/O: 373234

P/N: 1331720-2 SN: 105

Test Eng: <sup>A/B</sup> <sub>BEST</sub> Date: 3-17  
Drafter: <sup>24</sup> <sub>200</sub> MAR 17 1999

1

2

3

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	AMSU A1_17 A1.EXE;62	DIGITAL A DATA WARM CAL MODE	17-MAR-99	10:11:31	PAGE 1
2	REFLECTOR 1 POSITION	572	WARM CAL SAMPLE 17	CH 8	16180
3	REFLECTOR 2 POSITION	574	WARM CAL SAMPLE 17	CH 9	17251
4	REFFL 1 POS 1	576	WARM CAL SAMPLE 17	CH 10	16615
5	REFFL 2 POS 1	578	WARM CAL SAMPLE 17	CH 11	18092
6	REFFL 1 POS 2	580	WARM CAL SAMPLE 17	CH 12	17987
7	REFFL 2 POS 2	582	WARM CAL SAMPLE 17	CH 13	17431
8	REFFL 1 POS 3	584	WARM CAL SAMPLE 17	CH 14	19244
9	REFFL 2 POS 3	586	WARM CAL SAMPLE 17	CH 15	16614
10	REFFL 1 POS 4	588	WARM CAL SAMPLE 17	CH 16	10411
11	REFFL 2 POS 4	590	WARM CAL SAMPLE 17	CH 17	10212
12	REFFL 1 POS 5	592	WARM CAL SAMPLE 17	CH 18	10411
13	REFFL 2 POS 5	594	WARM CAL SAMPLE 17	CH 19	10212
14	REFFL 1 POS 6	596	WARM CAL SAMPLE 17	CH 20	16055
15	REFFL 2 POS 6	598	WARM CAL SAMPLE 17	CH 21	16464
16	REFFL 1 POS 7	600	WARM CAL SAMPLE 17	CH 22	16807
17	REFFL 2 POS 7	602	WARM CAL SAMPLE 17	CH 23	166707
18	REFFL 1 POS 8	604	WARM CAL SAMPLE 17	CH 24	16206
19	REFFL 2 POS 8	606	WARM CAL SAMPLE 17	CH 25	17249
20	REFFL 1 POS 9	608	WARM CAL SAMPLE 17	CH 26	16608
21	REFFL 2 POS 9	610	WARM CAL SAMPLE 17	CH 27	18090
22	REFFL 1 POS 10	612	WARM CAL SAMPLE 17	CH 28	17986
23	REFFL 2 POS 10	614	WARM CAL SAMPLE 17	CH 29	17436
24	REFFL 1 POS 11	616	WARM CAL SAMPLE 17	CH 30	19257
25	REFFL 2 POS 11	618	WARM CAL SAMPLE 17	CH 31	16615
26	REFFL 1 POS 12	620	WARM CAL SAMPLE 17	CH 32	10411
27	REFFL 2 POS 12	622	WARM CAL SAMPLE 17	CH 33	10212
28	REFFL 1 POS 13	624	WARM CAL SAMPLE 17	CH 34	10411
29	REFFL 2 POS 13	626	WARM CAL SAMPLE 17	CH 35	10212
30	REFFL 1 POS 14	628	WARM CAL SAMPLE 17	CH 36	16055
31	REFFL 2 POS 14	630	WARM CAL SAMPLE 17	CH 37	16464
32	REFFL 1 POS 15	632	WARM CAL SAMPLE 17	CH 38	16802
33	REFFL 2 POS 15	634	WARM CAL SAMPLE 17	CH 39	16712
34	REFFL 1 POS 16	636	WARM CAL SAMPLE 17	CH 40	16204
35	REFFL 2 POS 16	638	WARM CAL SAMPLE 17	CH 41	18097
36	REFFL 1 POS 17	640	WARM CAL SAMPLE 17	CH 42	17248
37	REFFL 2 POS 17	642	WARM CAL SAMPLE 17	CH 43	16613
38	REFFL 1 POS 18	644	WARM CAL SAMPLE 17	CH 44	17428
39	REFFL 2 POS 18	646	WARM CAL SAMPLE 17	CH 45	17988
40	REFFL 1 POS 19	648	WARM CAL SAMPLE 17	CH 46	11607
41	REFFL 2 POS 19	650	WARM CAL SAMPLE 17	CH 47	17428
42	REFFL 1 POS 20	652	WARM CAL SAMPLE 17	CH 48	19243
43	REFFL 2 POS 20	654	WARM CAL SAMPLE 17	CH 49	16613
44	REFFL 1 POS 21	656	WARM CAL SAMPLE 17	CH 50	10411
45	REFFL 2 POS 21	658	WARM CAL SAMPLE 17	CH 51	10212
46	REFFL 1 POS 22	660	WARM CAL SAMPLE 17	CH 52	10411
47	REFFL 2 POS 22	662	WARM CAL SAMPLE 17	CH 53	10212
48	REFFL 1 POS 23	664	WARM CAL SAMPLE 17	CH 54	16052
49	REFFL 2 POS 23	666	WARM CAL SAMPLE 17	CH 55	16464
50	REFFL 1 POS 24	668	WARM CAL SAMPLE 17	CH 56	16804
51	REFFL 2 POS 24	670	WARM CAL SAMPLE 17	CH 57	16710
52	REFFL 1 POS 25	672	WARM CAL SAMPLE 17	CH 58	670
53	REFFL 2 POS 25	674	WARM CAL SAMPLE 17	CH 59	92
54	REFFL 1 POS 26	676	WARM CAL SAMPLE 17	CH 60	90
55	REFFL 2 POS 26	678	WARM CAL SAMPLE 17	CH 61	92
56	REFFL 1 POS 27	680	WARM CAL SAMPLE 17	CH 62	92
57	REFFL 2 POS 27	682	WARM CAL SAMPLE 17	CH 63	92
58	REFFL 1 POS 28	684	WARM CAL SAMPLE 17	CH 64	92
59	REFFL 2 POS 28	686	WARM CAL SAMPLE 17	CH 65	92
60	REFFL 1 POS 29	688	WARM CAL SAMPLE 17	CH 66	92
61	REFFL 2 POS 29	690	WARM CAL SAMPLE 17	CH 67	92
62	REFFL 1 POS 30	692	WARM CAL SAMPLE 17	CH 68	92
63	REFFL 2 POS 30	694	WARM CAL SAMPLE 17	CH 69	92
64	REFFL 1 POS 31	696	WARM CAL SAMPLE 17	CH 70	92
65	REFFL 2 POS 31	698	WARM CAL SAMPLE 17	CH 71	92
66	REFFL 1 POS 32	700	WARM CAL SAMPLE 17	CH 72	92
67	REFFL 2 POS 32	702	WARM CAL SAMPLE 17	CH 73	92
68	REFFL 1 POS 33	704	WARM CAL SAMPLE 17	CH 74	92
69	REFFL 2 POS 33	706	WARM CAL SAMPLE 17	CH 75	92
70	REFFL 1 POS 34	708	WARM CAL SAMPLE 17	CH 76	92
71	REFFL 2 POS 34	710	WARM CAL SAMPLE 17	CH 77	92
72	REFFL 1 POS 35	712	WARM CAL SAMPLE 17	CH 78	92
73	REFFL 2 POS 35	714	WARM CAL SAMPLE 17	CH 79	92
74	REFFL 1 POS 36	716	WARM CAL SAMPLE 17	CH 80	92
75	REFFL 2 POS 36	718	WARM CAL SAMPLE 17	CH 81	92
76	REFFL 1 POS 37	720	WARM CAL SAMPLE 17	CH 82	92
77	REFFL 2 POS 37	722	WARM CAL SAMPLE 17	CH 83	92
78	REFFL 1 POS 38	724	WARM CAL SAMPLE 17	CH 84	92
79	REFFL 2 POS 38	726	WARM CAL SAMPLE 17	CH 85	92
80	REFFL 1 POS 39	728	WARM CAL SAMPLE 17	CH 86	92
81	REFFL 2 POS 39	730	WARM CAL SAMPLE 17	CH 87	92
82	REFFL 1 POS 40	732	WARM CAL SAMPLE 17	CH 88	92
83	REFFL 2 POS 40	734	WARM CAL SAMPLE 17	CH 89	92
84	REFFL 1 POS 41	736	WARM CAL SAMPLE 17	CH 90	92
85	REFFL 2 POS 41	738	WARM CAL SAMPLE 17	CH 91	92
86	REFFL 1 POS 42	740	WARM CAL SAMPLE 17	CH 92	92
87	REFFL 2 POS 42	742	WARM CAL SAMPLE 17	CH 93	92
88	REFFL 1 POS 43	744	WARM CAL SAMPLE 17	CH 94	92
89	REFFL 2 POS 43	746	WARM CAL SAMPLE 17	CH 95	92
90	REFFL 1 POS 44	748	WARM CAL SAMPLE 17	CH 96	92

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94			16206	REFLECTOR 1 POSITION	CH 7
96			16181	REFLECTOR 2 POSITION	CH 8
98			16249	REFLECTOR 1 POSITION	CH 9
100			117989	REFLECTOR 2 POSITION	CH 10
102			117431	REFL 1 POS 2ND LOOK	CH 11
104			119280	REFL 2 POS 2ND LOOK	CH 12
106			116613	WARM CAL SAMPLE 21	CH 13
108			116201		CH 14
110	REFLECTOR 1 POSITION	CH 15	116181		CH 15
1112	REFLECTOR 2 POSITION	CH 4	117249		CH 16
1114	REFL 1 POS 2ND LOOK	CH 4	118096		CH 17
1116	REFL 2 POS 2ND LOOK	CH 4	116606		CH 18
1118	WARM CAL SAMPLE 4	CH 3	117989		CH 19
1120			117431		CH 20
1122			116613		CH 21
1124			110411	REFLECTOR 1 POSITION	CH 21
1126			110212	REFLECTOR 2 POSITION	CH 21
1128			110411	REFL 1 POS 2ND LOOK	CH 21
1130			110212	REFL 2 POS 2ND LOOK	CH 21
1132			116614	WARM CAL SAMPLE 22	CH 21
1134			116202		CH 22
1136			116180		CH 23
1138			116613		CH 24
1140			116613		CH 25
1142			116613		CH 26
1144	REFLECTOR 1 POSITION	CH 15	116613		CH 27
1146	REFLECTOR 2 POSITION	CH 5	116613		CH 28
1148	REFL 1 POS 2ND LOOK	CH 5	110411	REFLECTOR 1 POSITION	CH 29
1150	REFL 2 POS 2ND LOOK	CH 5	110411	REFLECTOR 2 POSITION	CH 29
1152	WARM CAL SAMPLE 5	CH 3	110212	REFL 1 POS 2ND LOOK	CH 30
1154			110411	REFL 2 POS 2ND LOOK	CH 30
1156			116055	WARM CAL SAMPLE 23	CH 31
1158			116465		CH 32
1160			116803		CH 33
1162			117988		CH 34
1164			117450		CH 35
1166			116613		CH 36
1168			116202		CH 37
1170			116180		CH 38
1172			116613		CH 39
1174			116613		CH 40
1176			116613		CH 41
1178	REFLECTOR 1 POSITION	CH 15	116614	REFLECTOR 1 POSITION	CH 42
1180	REFLECTOR 2 POSITION	CH 6	116614	REFLECTOR 2 POSITION	CH 43
1182	REFL 1 POS 2ND LOOK	CH 6	110411	REFL 1 POS 2ND LOOK	CH 44
1184	REFL 2 POS 2ND LOOK	CH 6	110411	REFL 2 POS 2ND LOOK	CH 45
1186	WARM CAL SAMPLE 6	CH 3	110212	WARM CAL SAMPLE 23	CH 46
1188			116055		CH 47
1190			116465		CH 48
1192			116805		CH 49

AMSU A1_17	A1.EXE; 62	DIGITAL A DATA WARM CAL MODE	17-MAR-99	10:11:31	PAGE 3
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194			16708	772	16710
196			16205	774	16204
198			116178	776	16179
200			116247	780	16610
202			118098	784	18096
204			117990	786	17979
206			117440	788	17432
208			117268	790	19264
210			116615	792	16615
212	REFLECTOR 1 POSITION	CH 7	104112	1 POSITION	104112
214	REFLECTOR 2 POSITION	CH 8	104112	2 POSITION	104112
216	REFL 1 POS 7 2ND LOOK	CH 9	104112	REFL 2 POS 24 2ND LOOK	104112
218	REFL 2 POS 7 2ND LOOK	CH 10	104112	REFL 1 POS 24 2ND LOOK	104112
220	WARM CAL SAMPLE 3	CH 11	10212	REFL 2 POS 24 2ND LOOK	10212
222		CH 12	166053	WARM CAL SAMPLE 24	16053
224		CH 13	16467		16467
226		CH 14	168017		168017
228		CH 15	16205		16205
230		CH 16	16179		16179
232		CH 17	16604		16604
234		CH 18	17254		17254
236		CH 19	17433		17433
238		CH 20	17985		17985
240		CH 21	18103		18103
242		CH 22	16613		16613
244		CH 23	17437		17437
246		CH 24	16615		16615
248	REFLECTOR 1 POSITION	CH 25	104111	1 POSITION	104111
250	REFLECTOR 2 POSITION	CH 26	10212	2 POSITION	10212
252	REFL 1 POS 8 2ND LOOK	CH 27	104111	REFL 2 POS 25 2ND LOOK	104111
254	REFL 2 POS 8 2ND LOOK	CH 28	104111	REFL 1 POS 25 2ND LOOK	104111
256	WARM CAL SAMPLE 3	CH 29	10212	REFL 2 POS 25 2ND LOOK	10212
258		CH 30	16056	WARM CAL SAMPLE 25	16056
260		CH 31	16465		16465
262		CH 32	16706		16706
264		CH 33	16249		16249
266		CH 34	16610		16610
268		CH 35	17241		17241
270		CH 36	18099		18099
272		CH 37	17983		17983
274		CH 38	16615		16615
276		CH 39	17446		17446
278		CH 40	16615		16615
280	REFLECTOR 1 POSITION	CH 41	104111	1 POSITION	104111
282	REFLECTOR 2 POSITION	CH 42	10212	2 POSITION	10212
284	REFL 1 POS 9 2ND LOOK	CH 43	104111	REFL 2 POS 26 2ND LOOK	104111
286	REFL 2 POS 9 2ND LOOK	CH 44	10212	REFL 1 POS 26 2ND LOOK	10212
288	WARM CAL SAMPLE 9	CH 45	16053	REFL 2 POS 26 2ND LOOK	16053
290		CH 46	16469	WARM CAL SAMPLE 26	16469

AMSU A1\_17

A1.EXE;62

DIGITAL A DATA  
WARM CAL MODE

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294		872			16802
296		874			16708
298		876			16202
300		880			16182
302		882			17247
304		884			16609
306		886			18094
308		888			17994
310		890			17426
312	REFLECTOR 1 POSITION	10	110411	REFLECTOR 1 POSITION	27
314	REFLECTOR 2 POSITION	10	110212	REFLECTOR 2 POSITION	27
316	REFL 1 POS 10 2ND LOOK	10	110411	REFL 1 POS 27 2ND LOOK	10411
318	REFL 2 POS 10 2ND LOOK	10	110212	REFL 2 POS 27 2ND LOOK	10212
320	WARM CAL SAMPLE 10	CH	116053	WARM CAL SAMPLE 27	16054
322		904			16467
324		906			16806
326		908			116712
328		910			16202
330		912			17249
332		914			16608
334		916			118095
336		918			117993
338		920			17426
340		922			19233
342		924			16613
344		926			10411
346		928			10212
348	REFLECTOR 1 POSITION	11	110411	REFLECTOR 1 POSITION	28
350	REFLECTOR 2 POSITION	11	110212	REFLECTOR 2 POSITION	28
352	REFL 1 POS 11 2ND LOOK	11	110411	REFL 1 POS 28 2ND LOOK	10411
354	REFL 2 POS 11 2ND LOOK	11	110212	REFL 2 POS 28 2ND LOOK	10212
356	WARM CAL SAMPLE 11	CH	116058	WARM CAL SAMPLE 28	16054
358		936			16465
360		938			16803
362		940			116706
364		942			116179
366		944			16611
368		946			17250
370		948			18093
372		950			16603
374		952			17994
376		954			956
378		956			19241
380		960			16615
382	REFLECTOR 1 POSITION	12	110411	REFLECTOR 1 POSITION	29
384	REFLECTOR 2 POSITION	12	110212	REFLECTOR 2 POSITION	29
386	REFL 1 POS 12 2ND LOOK	12	110411	REFL 1 POS 29 2ND LOOK	10411
388	REFL 2 POS 12 2ND LOOK	12	110212	REFL 2 POS 29 2ND LOOK	10212
390	WARM CAL SAMPLE 12	CH	116064	WARM CAL SAMPLE 29	16057
392		3			CH

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ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394			16465	REFLECTOR 1 POSITION	10411
396			16803	REFLECTOR 2 POSITION	10412
398			16705	REFL 1 POS 13	10002
400			16204	REFL 2 POS 13	10004
402			16181	WARM CAL SAMPLE	10006
404			17248		
406			16612		
408			18097		
410			17982		
412			17438		
414			19278		
416			19616		
418			10411		
420			10412		
422			10411		
424			10412		
426			16057		
428			16646		
430			7063		
432			16203		
434			16706		
436			16247		
438			16610		
440			18094		
442			17974		
444			17253		
446			16615		
448			10248		
450			1016		
452			1012		
454			1018		
456			1022		
458			1024		
460			1026		
462			1028		
464			1030		
466			1032		
468			1034		
470			1036		
472			1038		
474			1040		
476			1042		
478			1044		
480			1046		
482			1048		
484			1050		
486			1052		
488			1054		
490			1056		
492			1058		
			1060		
			1062		
			1064		
			1066		
			1068		
			1070		
			COLD CAL DATA 2		

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DIGITAL A DATA 17-MAR-99 10:11:31 PAGE 6  
WARM CAL MODE

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	WARM CAL SAMPLE 15	CH	496	REFLECTOR 1 POSITION 16	CH
498	CH	45	500	REFLECTOR 2 POSITION 16	CH
500	CH	67	502	REFL 1 POS 16 2ND LOOK	CH
502	CH	89	504	REFL 2 POS 16 2ND LOOK	CH
504	CH	10	506	WARM CAL SAMPLE 16	CH
506	CH	11	510	REFLECTOR 1 POSITION 17	CH
510	CH	12	512	REFLECTOR 2 POSITION 17	CH
512	CH	13	516	REFL 1 POS 17 2ND LOOK	CH
516	CH	14	518	REFL 2 POS 17 2ND LOOK	CH
518	CH	15	522	WARM CAL SAMPLE 17	CH
522	CH	16	524	REFLECTOR 1 POSITION 17	CH
524	CH	17	526	REFLECTOR 2 POSITION 17	CH
526	CH	17	528	REFL 1 POS 17 2ND LOOK	CH
528	CH	17	530	REFL 2 POS 17 2ND LOOK	CH
530	CH	17	532	WARM CAL SAMPLE 17	CH
532	CH	17	534	REFLECTOR 1 POSITION 17	CH
534	CH	17	536	REFLECTOR 2 POSITION 17	CH
536	CH	17	538	REFL 1 POS 17 2ND LOOK	CH
538	CH	17	540	REFL 2 POS 17 2ND LOOK	CH
540	CH	17	542	WARM CAL SAMPLE 17	CH
542	CH	17	544	REFLECTOR 1 POSITION 17	CH
544	CH	17	546	REFLECTOR 2 POSITION 17	CH
546	CH	17	548	REFL 1 POS 17 2ND LOOK	CH
548	CH	17	550	REFL 2 POS 17 2ND LOOK	CH
550	CH	17	552	WARM CAL SAMPLE 17	CH
552	CH	17	554	REFLECTOR 1 POSITION 17	CH
554	CH	17	556	REFLECTOR 2 POSITION 17	CH
556	CH	17	558	REFL 1 POS 17 2ND LOOK	CH
558	CH	17	560	REFL 2 POS 17 2ND LOOK	CH
560	CH	17	562	WARM CAL SAMPLE 17	CH
562	CH	17	564	REFLECTOR 1 POSITION 17	CH
564	CH	17	566	REFLECTOR 2 POSITION 17	CH
566	CH	17	568	REFL 1 POS 17 2ND LOOK	CH
568	CH	17	570	REFL 2 POS 17 2ND LOOK	CH

AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA  
WARM CAL MODE

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
.090	SCAN MOTOR A1-1	17720	22.85	
.092	SCAN MOTOR A1-2	18597	24.12	
.094	FEEDHORN A1-1	19735	25.96	
.096	FEEDHORN A1-2	20799	26.58	
.098	RF MUX A1-1	20795	28.54	
.100	RF MUX A1-2	21842	30.84	
.102	LOCAL OSCILLATOR CHANNEL 3	22973	32.82	
.104	LOCAL OSCILLATOR CHANNEL 4	23143	33.08	
.106	LOCAL OSCILLATOR CHANNEL 5	22676	31.91	
.108	LOCAL OSCILLATOR CHANNEL 6	20604	28.29	
.110	LOCAL OSCILLATOR CHANNEL 7	21327	29.58	
.112	LOCAL OSCILLATOR CHANNEL 8	22544	32.36	
.114	LOCAL OSCILLATOR CHANNEL 15	21843	31.61	
.116	PLL LO #2 CHANNELS 9 THROUGH 14	20368	34.45	
.118	PLL LO #1 CHANNELS 9 THROUGH 14	23355	34.02	
.120	SPARE (NOT USED)	232767	32.86	
.122	MIXER//IF AMPLIFIER CHANNEL 3	22437	31.48	
.124	MIXER//IF AMPLIFIER CHANNEL 4	22086	31.54	
.126	MIXER//IF AMPLIFIER CHANNEL 5	21988	31.08	
.128	MIXER//IF AMPLIFIER CHANNEL 6	21086	29.07	
.130	MIXER//IF AMPLIFIER CHANNEL 7	21364	29.70	
.132	MIXER//IF AMPLIFIER CHANNEL 8	22039	31.65	
.134	MIXER//IF AMPLIFIER CH 9 THRU 14	20593	31.85	
.136	MIXER//IF AMPLIFIER CHANNEL 15	21873	31.17	
.138	IF AMPLIFIER CHANNEL 11 THRU 14	21841	30.97	
.140	IF AMPLIFIER CHANNEL 9	22294	31.99	
.142	IF AMPLIFIER CHANNEL 10	221919	31.22	
.144	IF AMPLIFIER CHANNEL 11	21096	29.08	
.146	DC/DC CONVERTER	22745	32.15	
.148	IF AMPLIFIER CHANNEL 13	21258	29.12	
.150	IF AMPLIFIER CHANNEL 14	21867	29.00	
.152	IF AMPLIFIER CHANNEL 12	20851	28.95	
.154	RF SHELF A1-1	21433	30.78	
.156	DETECTOR/PREAMPLIFIER ASSEMBLY	21840	30.77	
.158	A1-2	20032	26.77	
.160	A1-1 WARM LOAD 1	22877	23.20	
.162	A1-1 WARM LOAD 2	23077	23.23	
.164	A1-1 WARM LOAD 3	23145	23.29	
.166	A1-1 WARM LOAD 4	22838	23.27	
.168	A1-1 WARM LOAD CENTER	23027	23.32	
.170	A1-2 WARM LOAD 1	24010	24.91	
.172	A1-2 WARM LOAD 2	23840	24.88	
.174	A1-2 WARM LOAD 3	23883	24.96	
.176	A1-2 WARM LOAD 4	23798	24.92	
.178	A1-2 WARM LOAD CENTER	23661	24.79	
.180	TEMP SENSOR REFERENCE VOLTAGE	24886		

DESCRIPTION	STATUS	STATUS	STATUS	STATUS	STATUS
'ANNER A1-1 POWER	OFF	OFF	OFF	OFF	OFF
'ANNER A1-2 POWER	PLLO # 1	PLLO # 1	PLLO # 1	PLLO # 1	PLLO # 1
LL POWER	PLLO YES	PLLO YES	PLLO YES	PLLO YES	PLLO YES
ITENNA IN WARM CAL POSITION MODE	NO	NO	NO	NO	NO
ITENNA IN COLD CAL POSITION MODE	NO	NO	NO	NO	NO
ITENNA IN NADIR POSITION MODE	NO	NO	NO	NO	NO
ITENNA IN FULL SCAN MODE	NO	NO	NO	NO	NO
JRVIVAL HEATER POWER	OFF	CONNECT	CONNECT	CONNECT	CONNECT
DULE POWER	CONNECT	ZERO	ZERO	ZERO	ZERO
OLD CAL POSITION MSB	ZERO	ZERO	ZERO	ZERO	ZERO
OLD CAL POSITION LSB	ZERO	ZERO	ZERO	ZERO	ZERO
ANALOG DATA	VALUE	DEG C	VALUE	DEG C	VALUE
1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9	214
1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5	214
1-1 RF SHELF TEMPERATURE	215	23.4	215	23.4	215
1-2 RF SHELF TEMPERATURE	222	32.4	222	32.4	222
1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8	214
1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214
DESCRIPTION	VALUE	AMPS/VOLTS	VALUE	AMPS/VOLTS	VALUE
1-1 ANTENNA DRIVE MOTOR CURRENT	{AVRG}	4	1.86	4	1.86
1-2 ANTENNA DRIVE MOTOR CURRENT	{AVRG}	4	1.86	4	1.86
IGNAL PROCESSING +15 VDC	167	14.91	167	14.91	167
NTENNA DRIVE +15 VDC	167	14.66	167	14.66	167
IGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150
NTENNA DRIVE -15 VDC	149	-14.95	148	-15.00	148
ECEIVER AMPLIFIER +8 VDC	157	-8.05	157	-8.05	157
IGNAL PROCESSOR +5 VDC	143	5.07	143	5.07	143
NTENNA DRIVE +5 VDC	142	4.98	142	4.98	142
ECEIVER MIXER/IF +10 VDC	166	9.97	166	9.97	166
HASE LOCK LOOP {CHANNEL 9/14} +15 VDC	167	14.99	167	14.99	167
HASE LOCK LOOP {CHANNEL 9/14} -15 VDC	142	-14.90	142	-14.90	142
.O. VOLTAGE CHANNEL 8	172	-10.00	172	-10.00	172
.O. VOLTAGE CHANNEL 7	169	10.00	169	10.00	169
.O. VOLTAGE CHANNEL 6	173	10.00	173	10.00	173
.O. VOLTAGE CHANNEL 3	173	10.00	173	10.00	173
.O. VOLTAGE CHANNEL 4	172	9.94	172	9.94	172
.O. VOLTAGE CHANNEL 5	171	10.11	171	10.11	171
LL# 2 LOCK DETECT	24	0.08	24	0.08	24
LL# 1 LOCK DETECT	220	4.40	220	4.40	220
.O. VOLTAGE (CHANNEL 15)	VDC	167	14.91	167	14.91

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AZONIX DATA 17-MAR-99 10:11:31 PAGE 9  
WARM CALL MODE

PRT TEMPERATURES		VARIABLE TARGET		FIXED TARGET		BASEPLATE	
A1-1	NO.	A1-2	NO.	A1-2	NO.	A1-2	NO.
		DEG K		DEG K		DEG K	
		42.00		14.00		14.00	
		43.00		15.00		15.00	
		44.00		16.00		17.00	
		45.00		17.00		18.00	
		46.00		18.00		19.00	
		47.00		19.00		20.00	
		48.00		20.00		21.00	
		49.00		21.00		22.00	
		50.00		22.00		23.00	
		51.00		23.00		24.00	
		52.00		24.00		25.00	
		53.00		25.00		26.00	
		54.00		26.00		27.00	
		55.00		27.00		28.00	
		56.00		28.00		29.00	
		57.00		29.00		30.00	
		58.00		30.00		31.00	
		59.00		31.00		32.00	
		60.00		32.00		33.00	
		61.00		33.00		34.00	
		62.00		34.00		35.00	
		63.00		35.00		36.00	
		64.00		36.00		37.00	
		65.00		37.00		38.00	
		66.00		38.00		39.00	
		67.00		39.00		40.00	
		68.00		40.00		41.00	
		69.00		41.00		42.00	
		70.00		42.00		43.00	
		71.00		43.00		44.00	
		72.00		44.00		45.00	
		73.00		45.00		46.00	
		74.00		46.00		47.00	
		75.00		47.00		48.00	
		76.00		48.00		49.00	
		77.00		49.00		50.00	
		78.00		50.00		51.00	
		79.00		51.00		52.00	
		80.00		52.00		53.00	
		81.00		53.00		54.00	
		82.00		54.00		55.00	
		83.00		55.00		56.00	
		84.00		56.00		57.00	
		85.00		57.00		58.00	
		86.00		58.00		59.00	
		87.00		59.00		60.00	
		88.00		60.00		61.00	
		89.00		61.00		62.00	
		90.00		62.00		63.00	
		91.00		63.00		64.00	
		92.00		64.00		65.00	
		93.00		65.00		66.00	
		94.00		66.00		67.00	
		95.00		67.00		68.00	
		96.00		68.00		69.00	
		97.00		69.00		70.00	
		98.00		70.00		71.00	
		99.00		71.00		72.00	
		100.00		72.00		73.00	

THE BIMOCOUPLE TEMPERATURES

ESTATE PLANNING

VARIABLE TARGET SHOOTING

ESTIYED TABGET N2

VARIABLE TARGET N2

CN

FIXED TARGET FLOW METER  
VARIABLE TARGET FLOW METER  
BASEPLATE HEATER N2  
BASEPLATE N2  
BASEPLATE FLOW METER  
ADJUNCT RADIATORS

A1-2		DEG K	
NO.			
53.7		34.00	
53.8		35.00	
52.5		33.6.000	
50.2		33.7.000	
50.3		30.000	
51.2		31.000	
51.9		32.000	
50.9		33.000	
51.0		38.000	
50.4		39.000	
51.3		61.000	
52.2		62.000	
		10.000	
			74.00
			76.00
			57.00
			58.00
A1-1		DEG K	
NO.			
55.8		5.00	
55.9		6.00	
55.0		7.00	
54.6		8.000	
50.7		0.000	
51.6		0.000	
51.7		0.000	
51.4		0.000	
51.5		0.000	
50.8		0.000	
50.8		0.000	
50.9		0.000	
51.1		0.000	
51.2		0.000	
52.3		0.000	
52.3		0.000	
52.7		0.000	
57.9		0.000	
		6.000	
		3.000	
		5.000	
		3.000	
		5.000	
		7.000	



1980

TEST DATA SHEET 5  
+28 V Analog Telemetry Bus (Paragraph 3.2.4.2.3)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	+28 V ATB Bus Voltage ( $V_{at}$ ) (Measured)	28.08 Volts	28.0 ±0.5	P
4	Avg. Current ( $I_a$ )	1.75 mA	7 mA max	P
5	+28 V ATB Operating Power = $I_a \times V_{at}$	4.94 mW	200 mW max	P

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hay  
Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 6  
+10 V Interface Bus Voltage (Paragraph 3.2.4.2.4)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	Av. Current ( $I_a$ )	6.82 mA	10 mA max	P
3	+10 V Interface Bus ( $V_{ib}$ ) (Measured)	9.17 Volts	9.0 ± 1.0 V	P
4	+10 V Interface Bus Power = $I_a \times V_{ib}$	62.54 mW	100 mW max	P

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hall  
Test Systems Engineer

Date

MAR 17 1999



3/16/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 8  
1.248 MHz Clock Signal Verification (Paragraph 3.2.4.3.2.1)

1.248 CLOCK SIGNAL  
ATTACH PHOTOGRAPH OR PLOT HERE

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
5	Clock Frequency	1.248 MHz	1.248 ±10%	P
	Clock Amplitude	8.92 Volts	9.0 ±1.0 V	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 379234

S/N: 101

D. Hask 3/16/99

Test Systems Engineer

Date

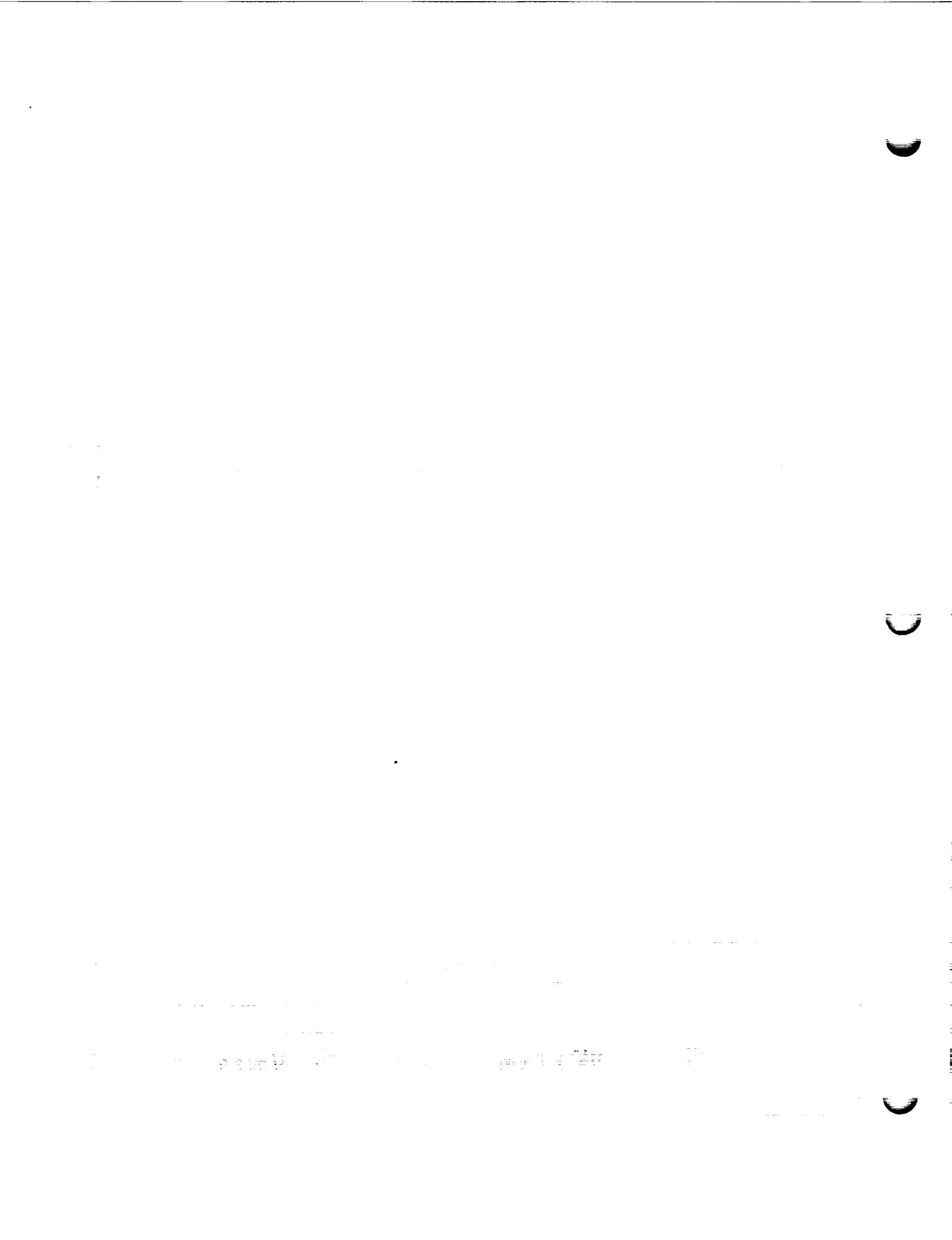
Customer Representative  
(Flight Hardware Only)

Date

3/16/99

Quality Control

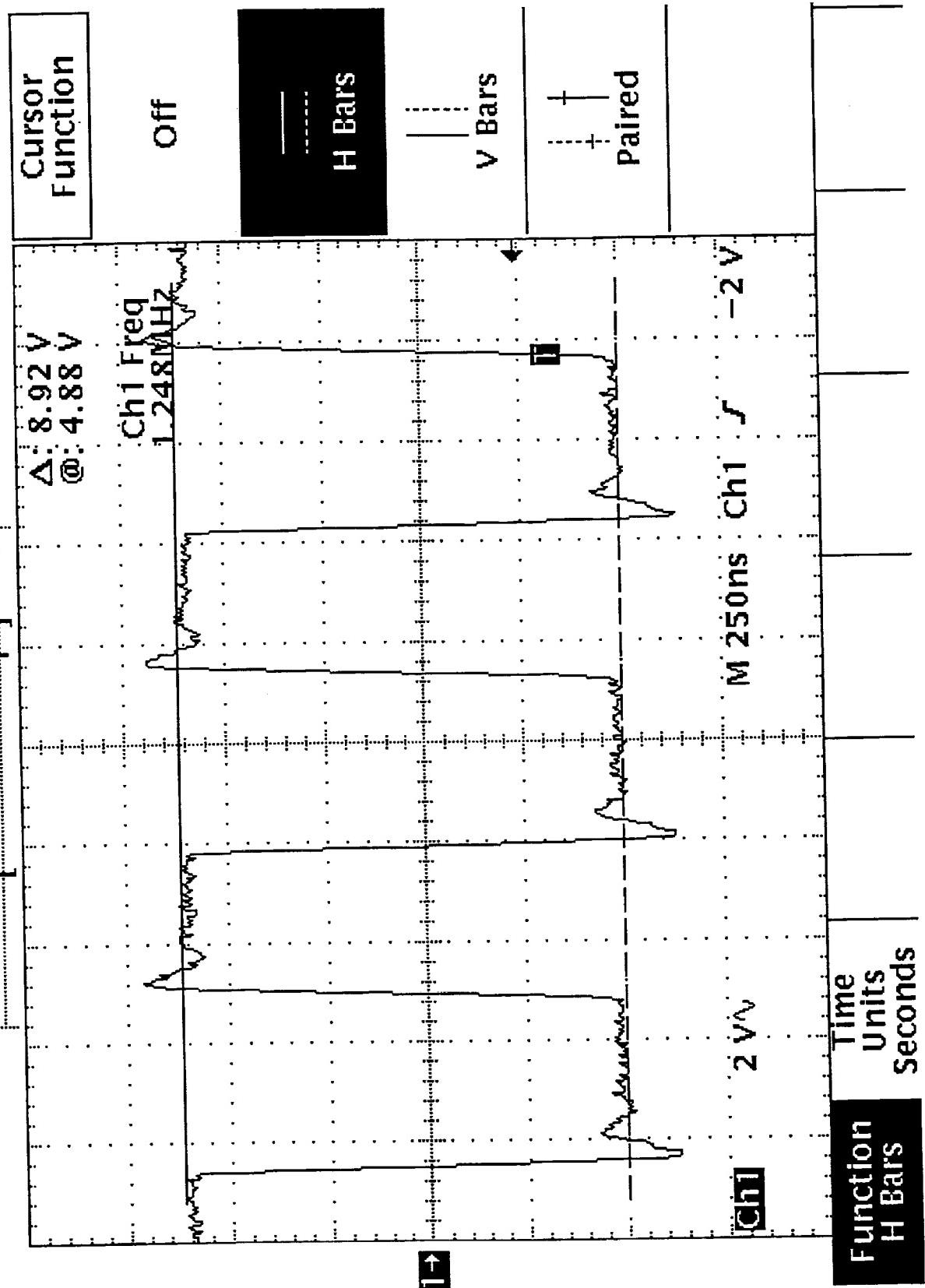
Date



Tek Stop: 200MS/s

1449 Acqs

TDS 8





TEST DATA SHEET 9  
"C1" Shift Pulse Verification (Paragraph 3.2.4.3.2.2)

"C1" SHIFT PULSE  
Attach Photograph OR Plot Here

Parameter	Measured/ Calculated	Required	Pass/Fail
Pulse Timing (A) *	48 $\mu$ s	48 $\mu$ s $\pm$ 10%	P
Pulse Timing (B) *	12.4 $\mu$ s	12 $\mu$ s $\pm$ 10%	P
Pulse Amplitude	9.0 Volts	9.0 $\pm$ 1.0 V	P

\* Refer to Figure 13 for location of the pulse timing A and B.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

N. Haif 3/16/95  
Test Systems Engineer

Date



MAR 17 1995



3-16-95

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

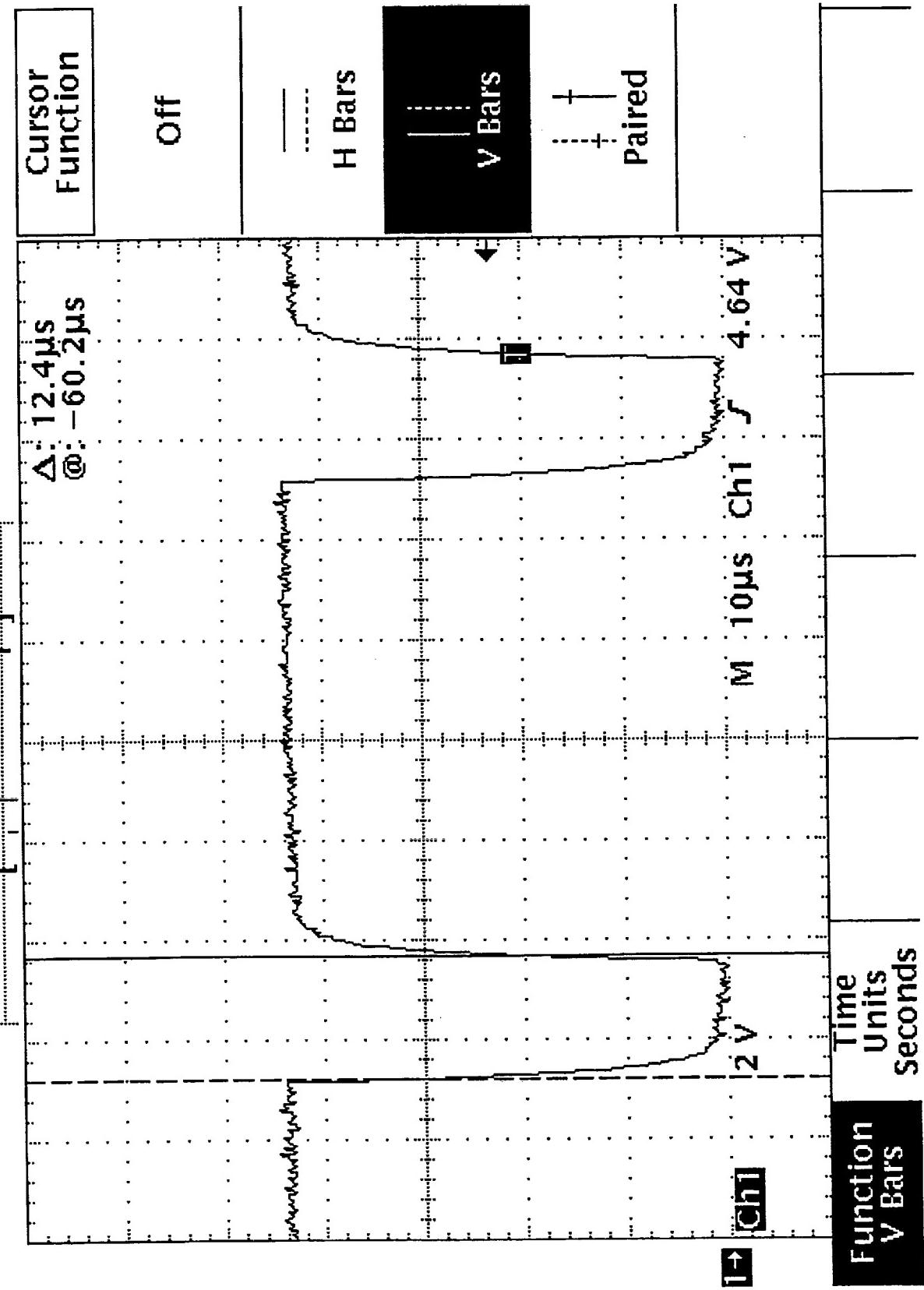
Date

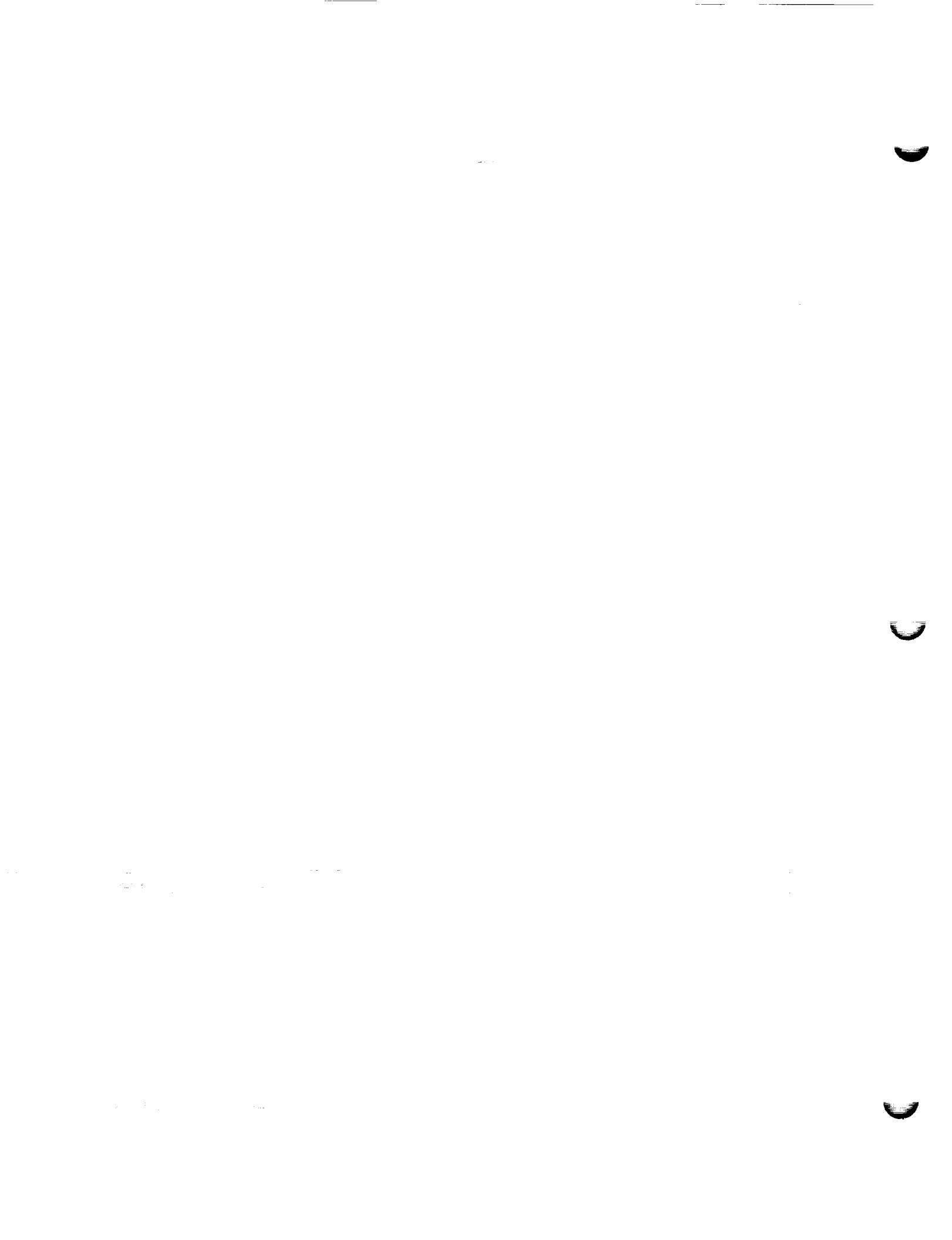


7DS 9

Tek Stop: 5MS/s

3082 Acqs





TEST DATA SHEET 10  
"A1" Select Pulse Verification (Paragraph 3.2.4.3.2.3)

"A1" SELECT PULSE  
Attach Photograph or Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Select Pulse Timing (F) *	960 $\mu$ s	961.5 $\mu$ s $\pm$ 10%	P
Select Pulse Amplitude	8.56 Volts	9.0 $\pm$ 1.0 V	P

\* Refer to Figure 13 for location of the pulse timing F

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hall 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

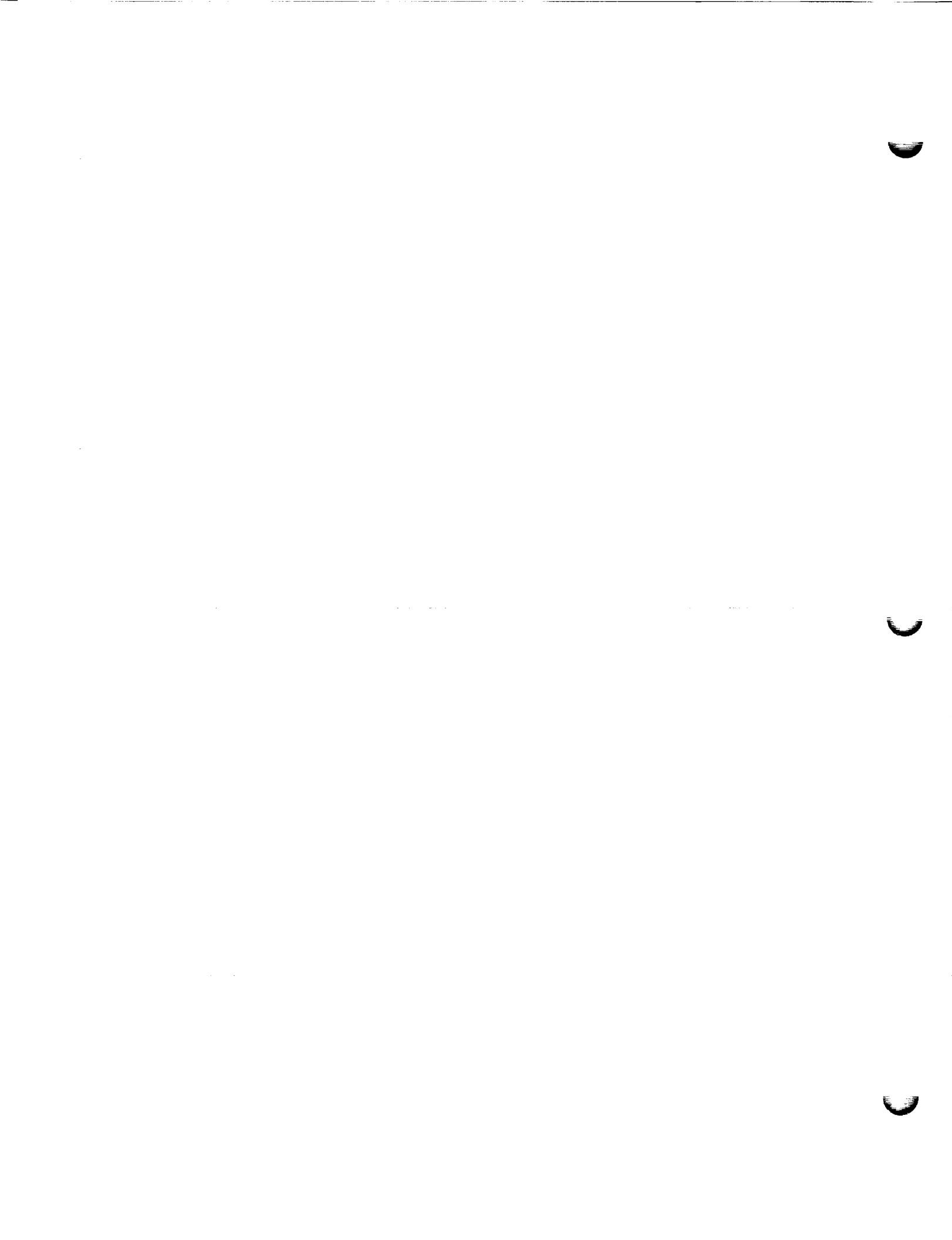
Date

Quality Control

Date

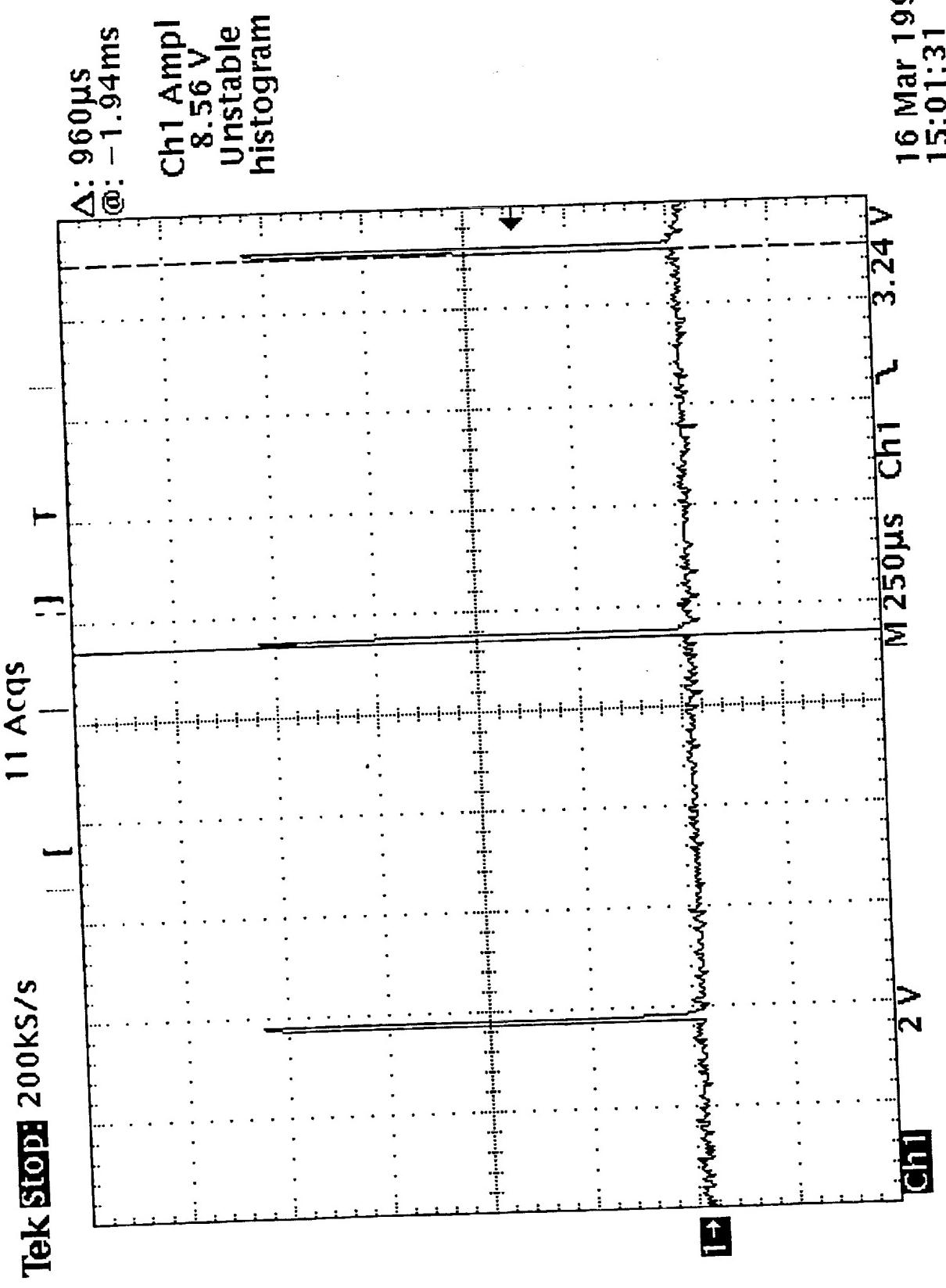


3/16/99

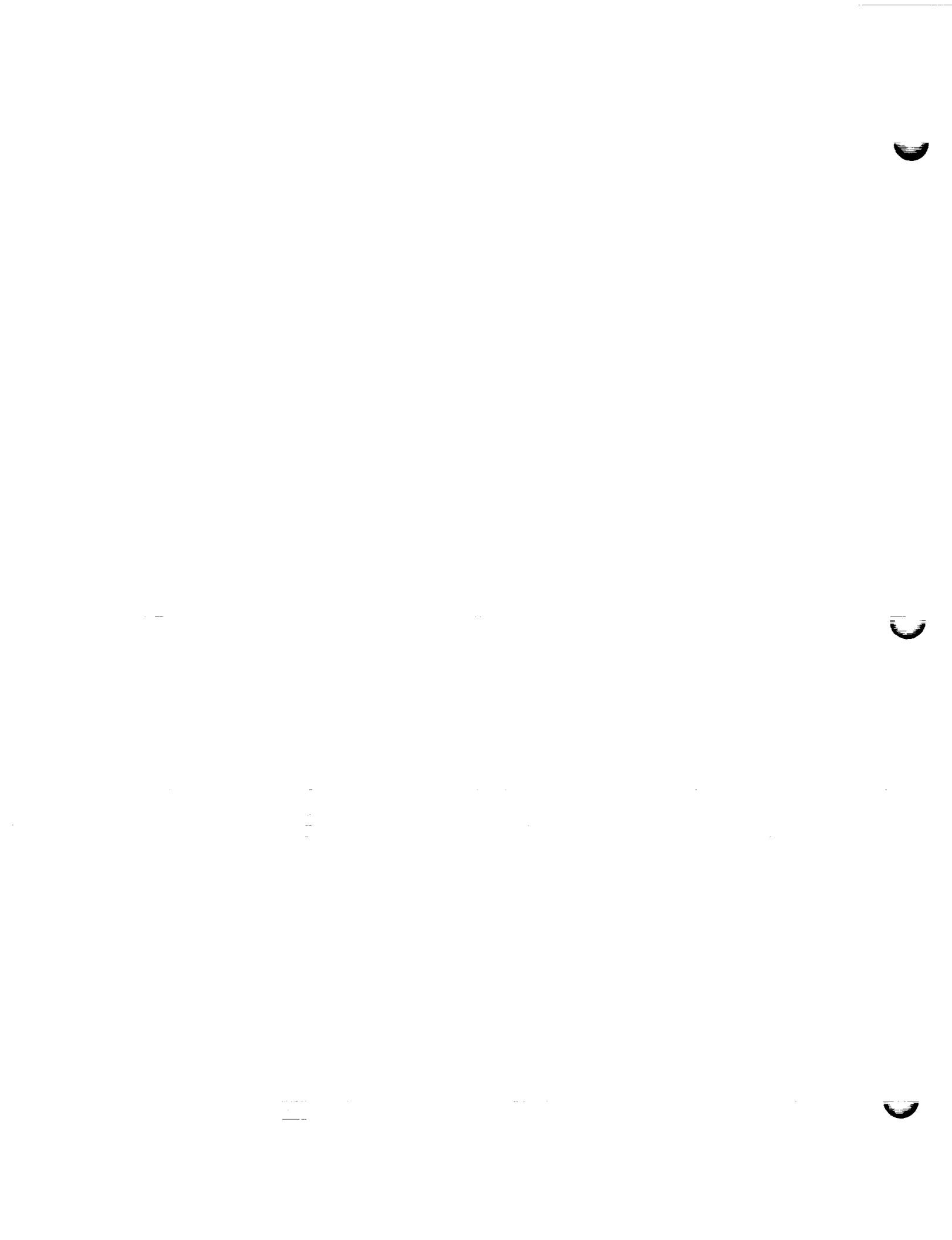


TDS 10

Tek Stop: 200ks/s



16 Mar 1999  
15:01:31



TEST DATA SHEET 11  
"8 Seconds" Frame Sync Pulse (Paragraph 3.2.4.3.2.4)

"8 SECONDS" FRAME SYNC PULSE  
Attach Photograph or Plot Here  
(Record of "C" timing only is required)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
1*	Frame Sync Pulse Timing (G)*	8 Sec	8 Sec $\pm$ 10%	P
	Frame Sync Pulse Timing (C)*	241 $\mu$ s	240.4 $\mu$ s $\pm$ 10%	P
	Frame Sync Pulse Amplitude	8.72 Volts	9.0 $\pm$ 1.0 V	P

\* Refer to Figure 13 for location of the timing pulses for G and C.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N:

105

R. Hart 3/16/99

Test Systems Engineer

Date

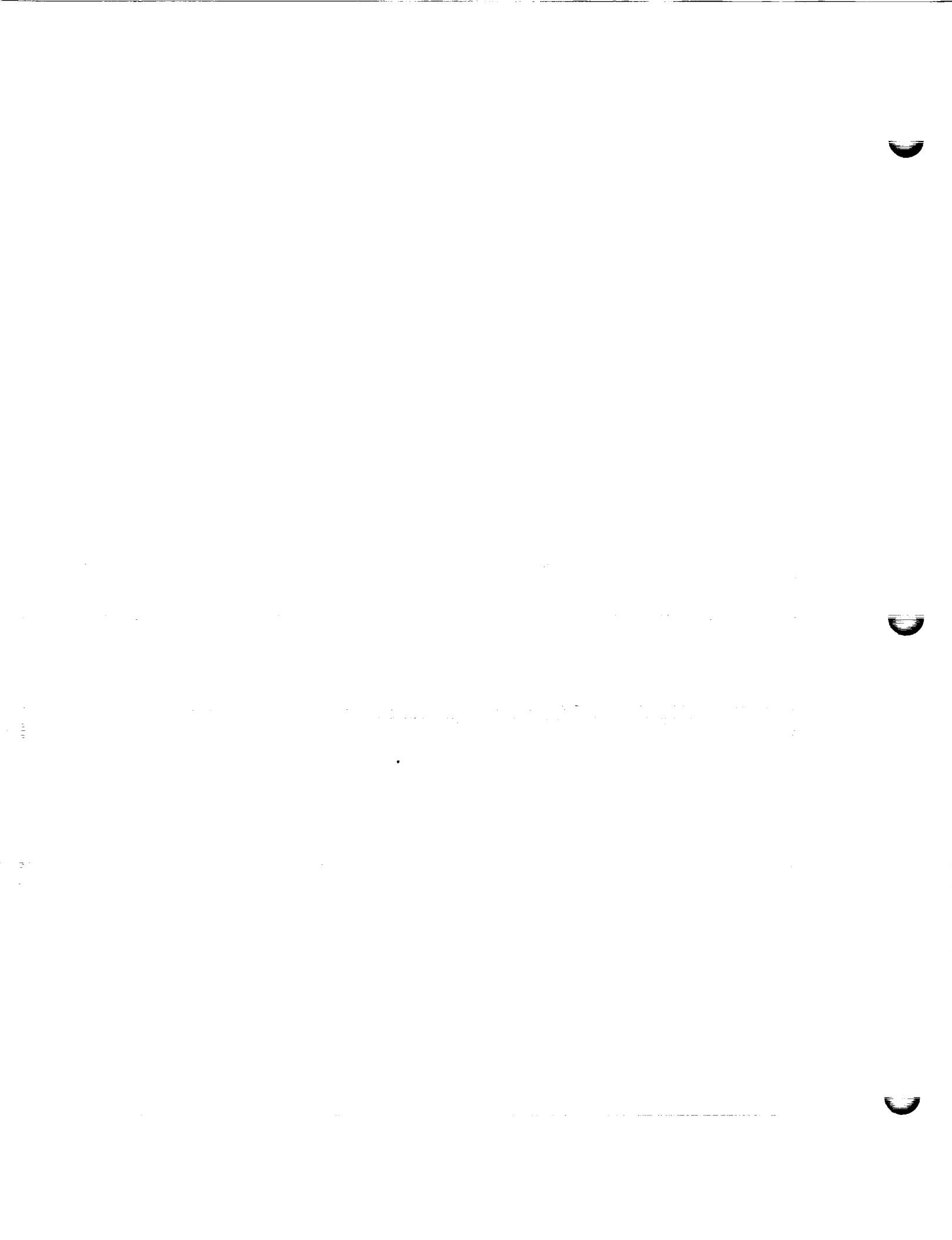
Customer Representative  
(Flight Hardware Only)

 3-17-99

Date

 Quality Control

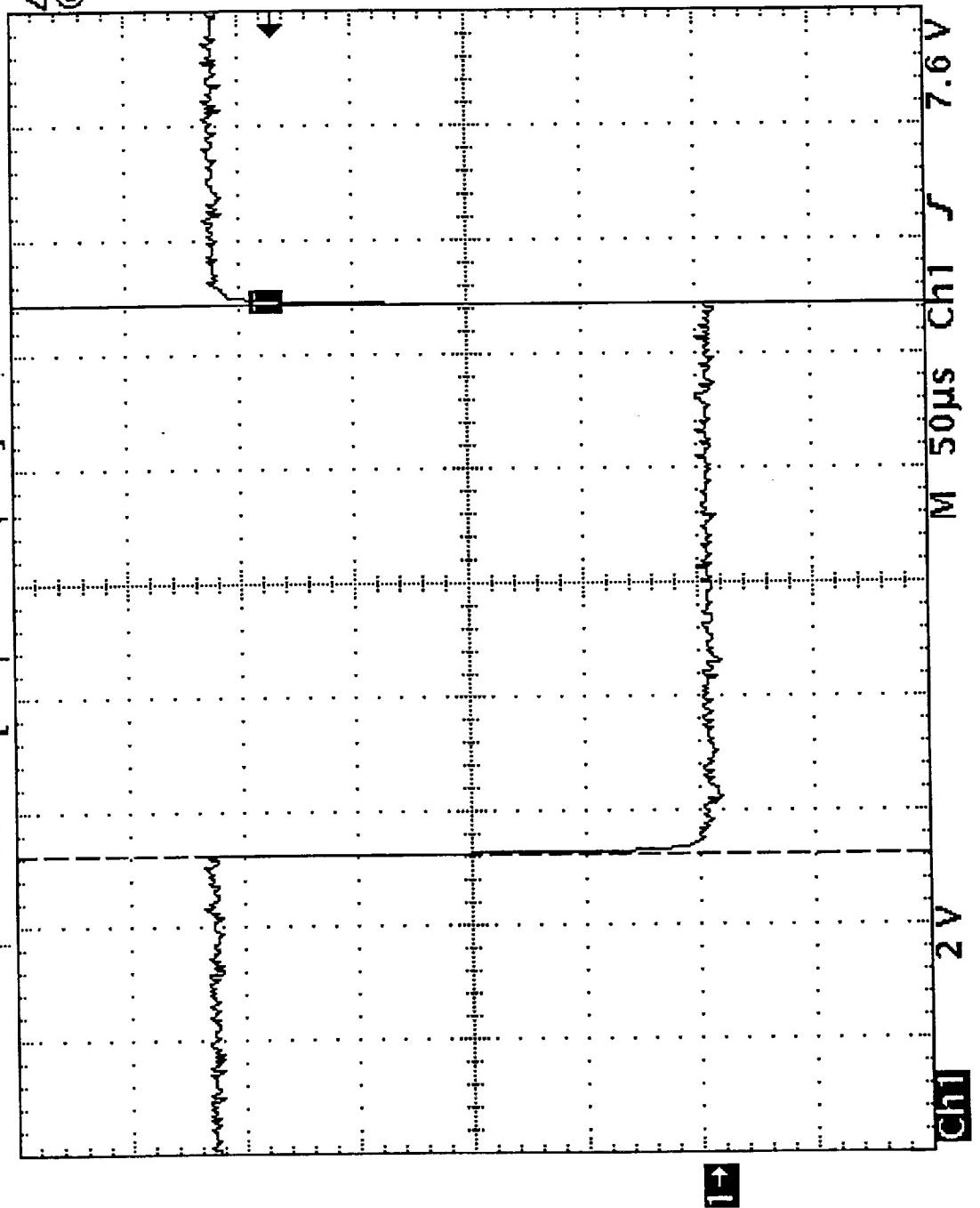
Date



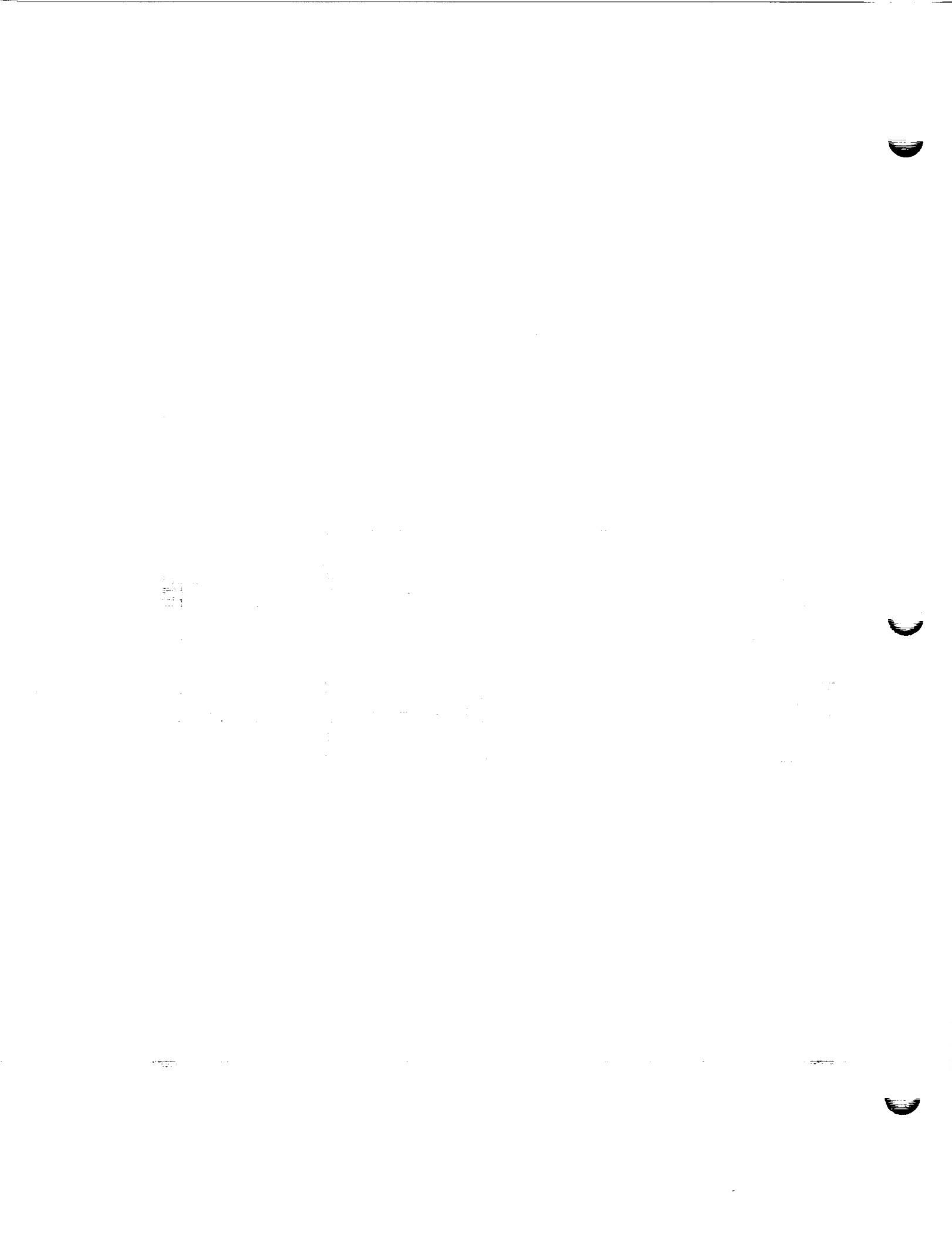
Tek Stop: 1MS/S

3 ACCS

TDS //



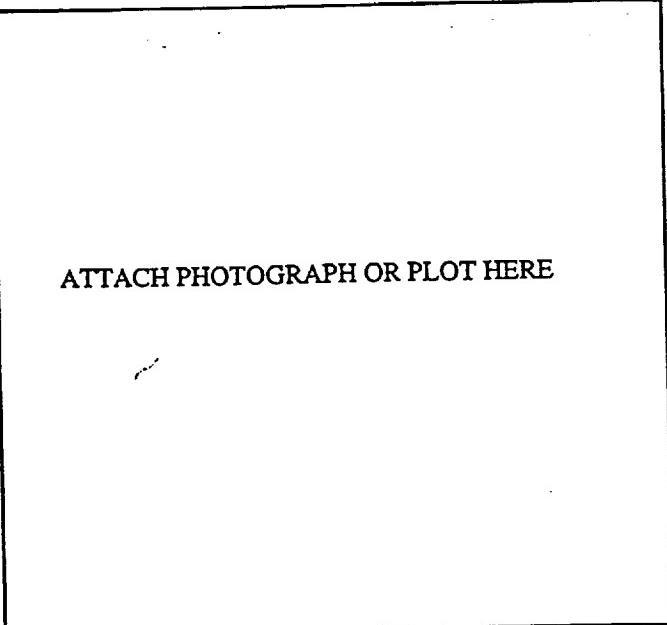
16 Mar 1999  
14:48:13



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 12 (Sheet 1 of 2)  
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 8 seconds Frame sync pulse.



ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between H and C is as shown in Figure 19.

TIME MEASURED: 1.20 ms

TIME REQUIRED: 1.2 ms ±10%

PASS/FAIL P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 101

R. Hay Date

3/16/99

Test Systems Engineer

Date

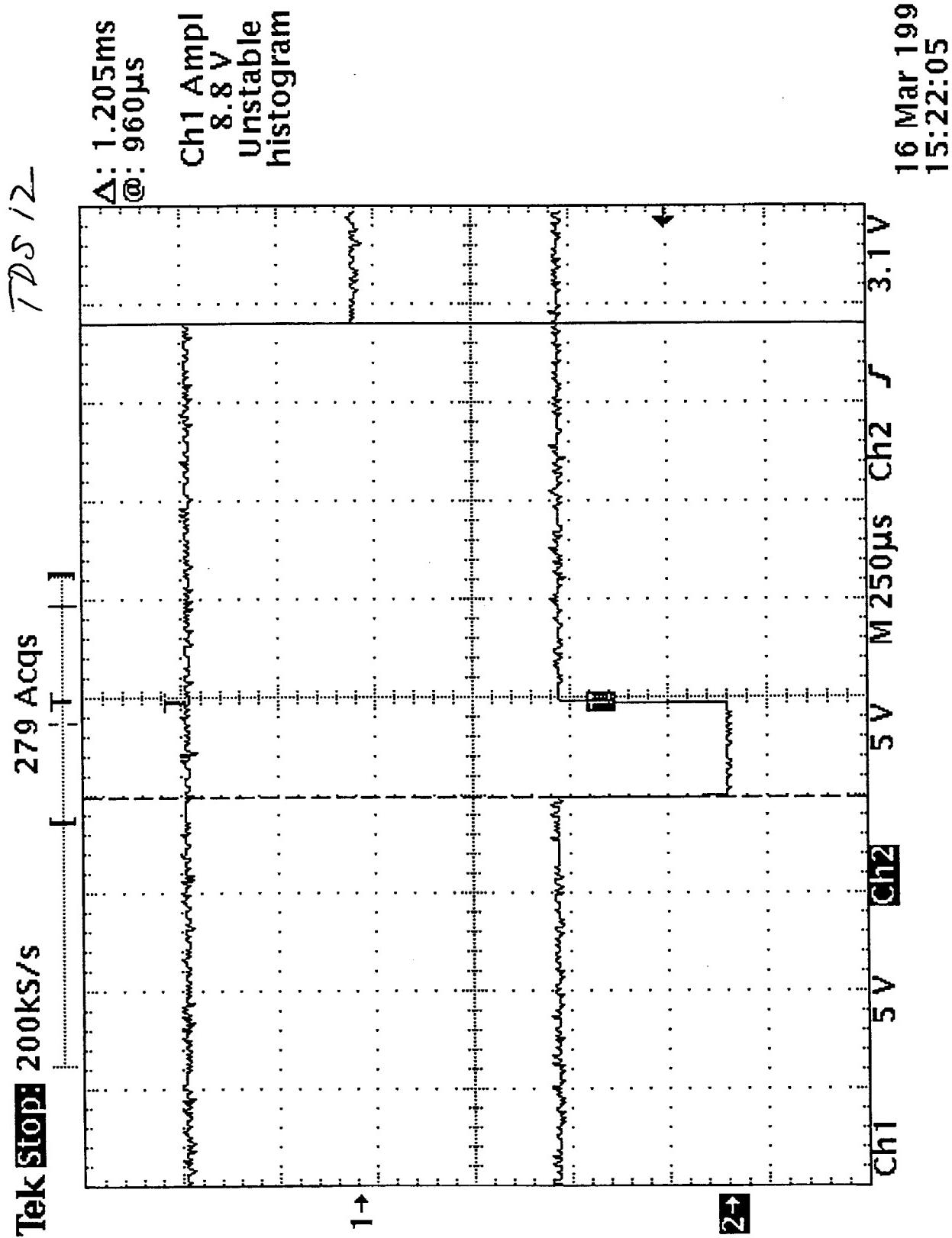
  
Customer Representative  
(Flight Hardware Only)

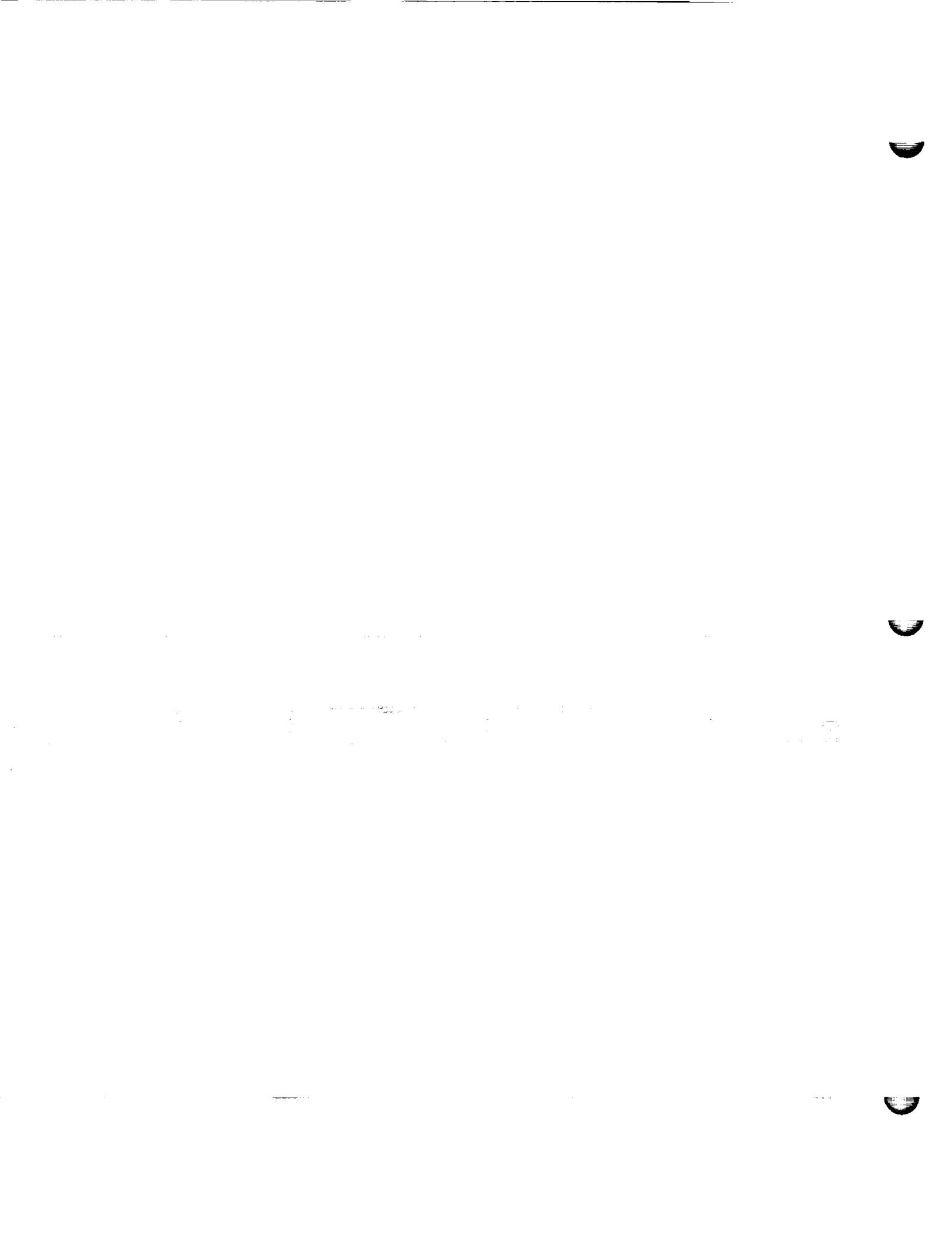
3-17-99  
Date

  
Quality Control

Date







TEST DATA SHEET 12 (Sheet 2 of 2)  
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the C1 Shift pulse.

ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between I and E is as shown in Figure 19.

TIME MEASURED: 24 μs

TIME REQUIRED:  $24 \mu s \pm 1 \mu s$

PASS/FAIL P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 01

R. Hall 3/16/99  
Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

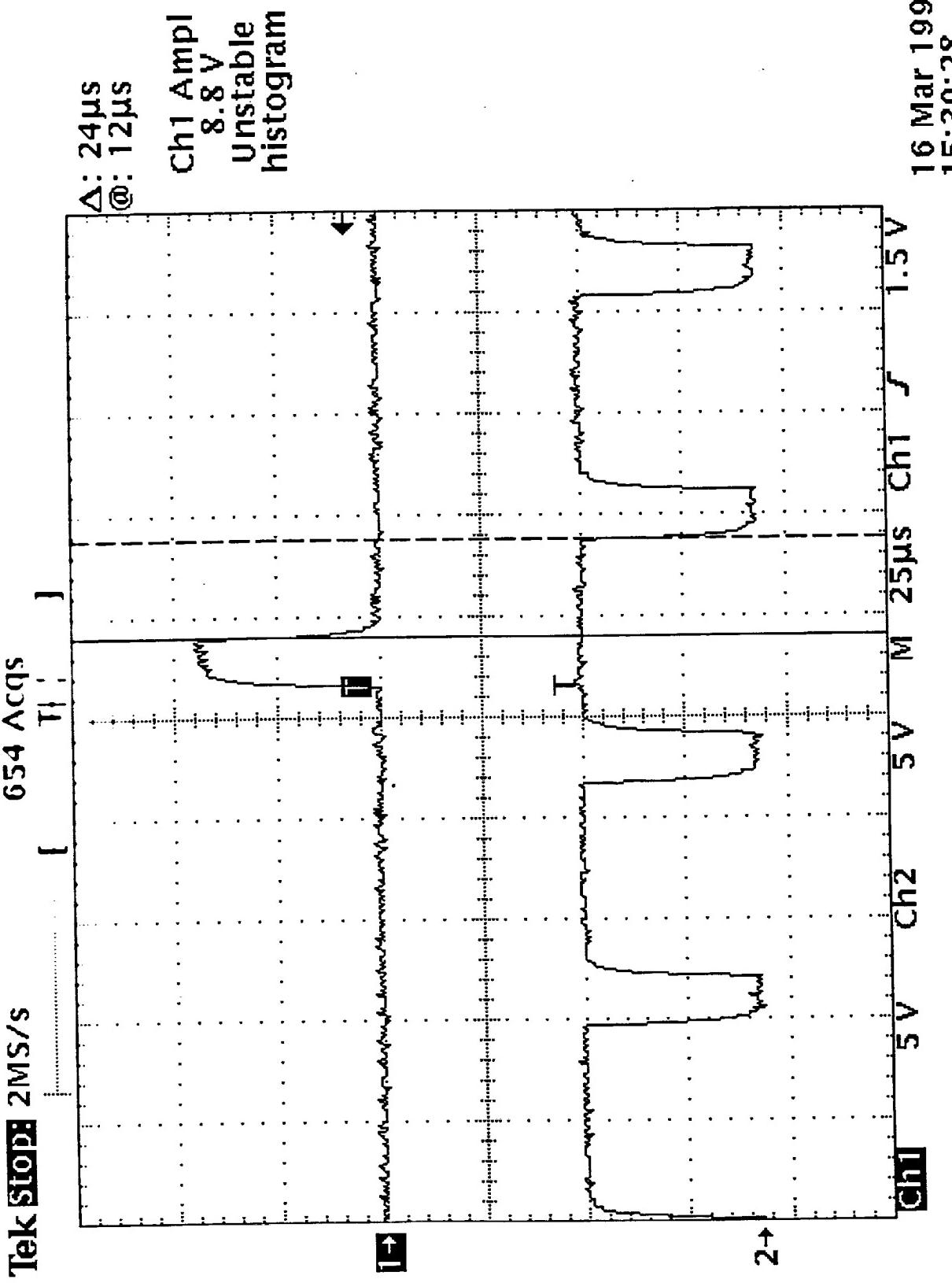
Quality Control

Date



$\tau D S / 2$

Tek Stop: 2MS/s



$\Delta: 24\mu s$   
@: 12 $\mu$ s  
Ch1 Ampl  
8.8 V  
Unstable  
histogram

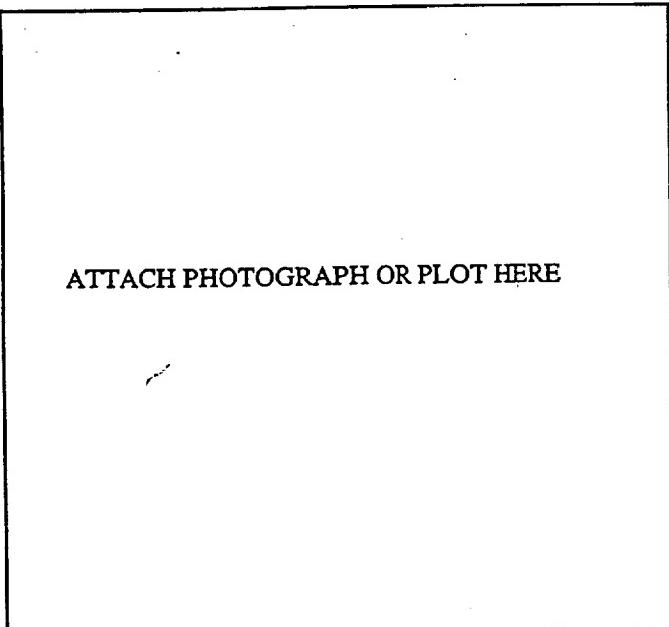
16 Mar 1999  
15:30:28



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 13  
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 1.248 MHz clock.



Verify that the sync pulse between I and J is as shown in Figure 19.

PASS/FAIL PASS

ATTACH PHOTOGRAPH OR PLOT HERE

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105



3-17-99

Date

Test Systems Engineer



3-17-99

Date

Customer Representative  
(Flight Hardware Only)

3-17-99

Quality Control



$\Delta: 4.24\mu s$   
 $@: -2.8\mu s$

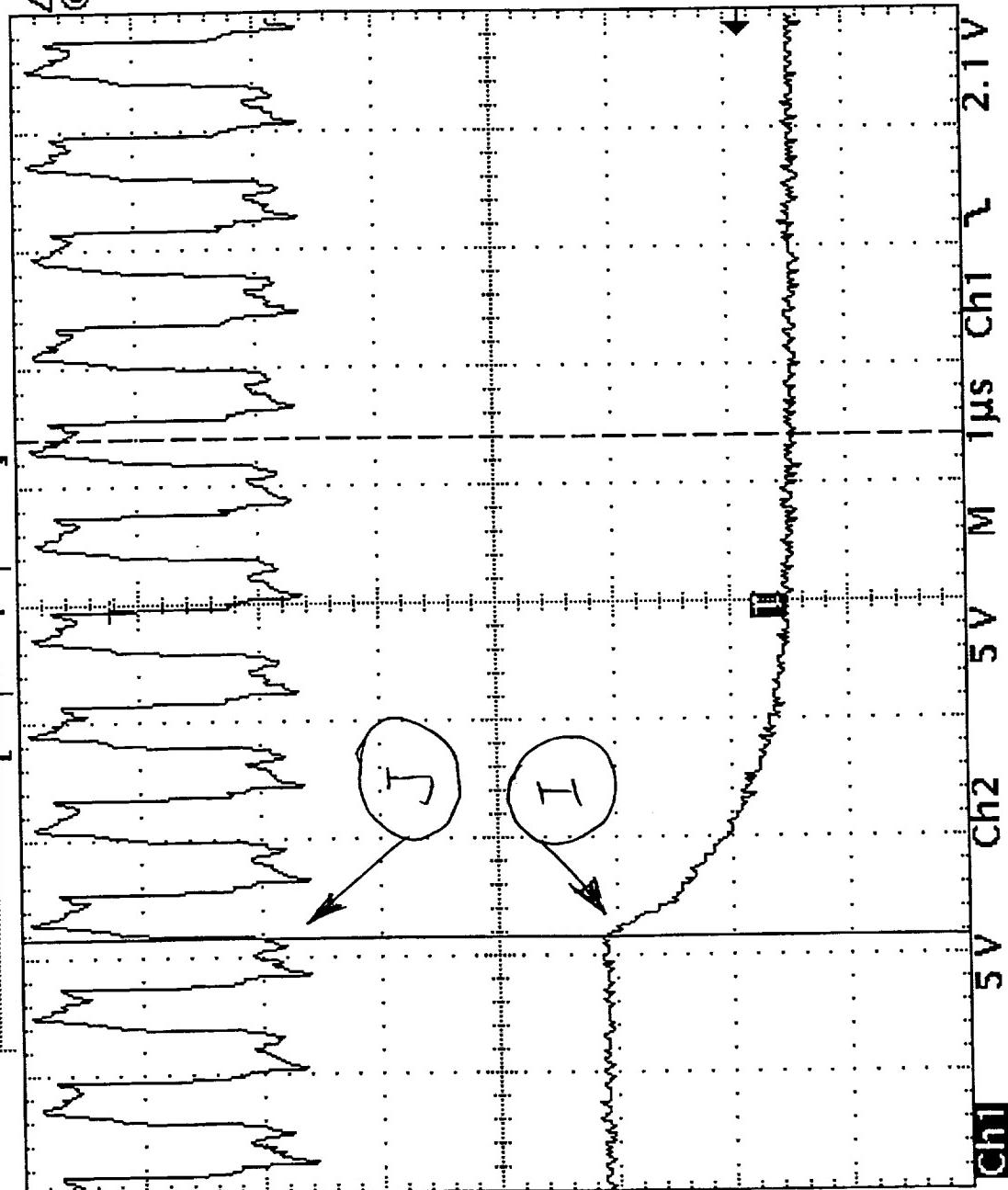
IN SYNC

Tek Stop: 50MS/s

124.8 MHz  
Clock

2→

A1 Select



S/N: 3732.34

SNR: 105

3.2.4.3.2.5

TDS-13

Sync Sync RELATION 154/10

17 Mar 1999  
14:56:41

Date: 3-17-99

Test Eng: 3.2.4.3.2.5

Sync Sync RELATION 154/10

TDS-13

S/N: 105

Quality: 3-17-99



**TEST DATA SHEET 14**  
Commands and Digital-B Telemetry Verification (Paragraphs 3.2.4.3.3.1, 3.2.4.3.3.2, 3.2.4.3.3.3, and 3.2.4.3.3.4)

Test	Digital-B Commands Verification Via STE			Visual Inspection		Pass/Fail
	Command	Observed	Required	Observed	Required	
3.2.4.3.3.1  Module Totally Off	Scanner A1-1	✓	OFF	✓	Antenna pointing to warm load.	P
	Scanner A1-2	✓	OFF	✓	Antenna pointing to warm load.	P
	Module Power		Disconnect	N/A	N/A	
	Survival Htr. Power.	✓	OFF	✓	28 V supply current=0	P
3.2.4.3.3.2  Survival Heater Power	Survival Heater ON	✓	ON	N/A	N/A	P
	Survival Heater OFF		OFF	N/A	N/A	P
3.2.4.3.3.3	Module Power Connect	✓	Connect	28.09V 2.25A	+28 V DC current is between 0.5 and 3.2 amps.	P
3.2.4.3.3.4  PLL Power	PLLO#2	✓	PLLO#2	N/A	N/A	P
	PLLO#1	✓	PLLO#1	N/A	N/A	P

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hid  
Test Systems Engineer

Date

MAR 17 1999

Date

Customer Representative  
(Flight Hardware Only)

3/10/99  
Quality Control

Date

TEST DATA SHEET 15  
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 1)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	✓
	2 Survival Heater	✓	OFF	↓
	3 Scanner A1 Power	✓	ON	↓
	4 Scanner A2 Power	✓	ON	↓
	5 Antenna Warm Cal Pos.	✓	NO	↓
	6 Antenna Cold Cal Pos.	✓	NO	↓
	7 Antenna NADIR Position	✓	NO	↓
	8 Antenna Full Scan	✓	YES	↓
	9 PLL Power	✓	PLL#1	↓
	10 Cold MSB	✓	0	↓
	11 Cold LSB	✓	0	↓

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Haigl Test Systems Engineer

Date



3/16/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 16  
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 2)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P
	2 Survival Heater	✓	OFF	
	3 Scanner A1 Power	✓	OFF	
	4 Scanner A2 Power	✓	OFF	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	—	NO	
	8 Antenna Full Scan	✓	YES	
	9 PLL Power	✓	PLL#1	
	10 Cold MSB	✓	0	
	11 Cold LSB	✓	0	▼

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105R. Haig Test Systems Engineer

Date



MAR 17 1999

3/14/99Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 17  
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 3)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	✓
	2 Survival Heater	✓	OFF	
	3 Scanner A1 Power	✓	ON	
	4 Scanner A2 Power	✓	ON	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 PLL Power	✓	PLLO#1	
	10 Cold MSB	✓	0	
	11 Cold LSB	✓	0	↓

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hall 3/16/99

Date

Test Systems Engineer



MAR 17 1999



3/16/99

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

TEST DATA SHEET 18  
Scanner Positions Commands (Paragraph 3.2.4.3.3.6)

Test	Digital "B" Verification			Pass/Fail
	Step/Description	Observed	Required	
Scanner Position Commands	1-Warm Cal.		✓	YES
	2-Cold Cal. Pos.	MSB	✓	0
		LSB	✓	1
	3-Cold Cal. Pos.	MSB	✓	1
		LSB	✓	0
	4-Cold Cal. Pos.	MSB	✓	1
		LSB	✓	1
	5-Cold Cal. Pos.	MSB	✓	0
		LSB	✓	0
	6-NADIR		✓	YES
	7-Warm Cal		✓	YES

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234S/N: 105R. Hair 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Date



3/16/99

Date

Customer Representative  
(Flight Hardware Only)

Quality Control

### TEST DATA SHEET 19

Digital-A Data Output Full Scan Mode Synch Sequence,  
Unit I.D./Serial Number and Digital-B Serial Data Verification  
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.1)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	2	2	
	0006	Digital-B Data Byte 2	14	**	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	▼
* AMSU A1 Identification Words (data entered in decimal system)			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	
** Required value = 14 when PLLO #1 is active; and = 6 when PLLO #2 is active.					
Circle Test: CPT LPT					
METSAT/AMSU-A1 System P/N IS-1331720				Shop Order: 373234	S/N: 105
				R. Haig	3/16/99
				Test Systems Engineer	Date
				3/16/99	
Customer Representative (Flight Hardware Only)				Quality Control	Date

70

MSU A1-17 A1,EXE;62 FULL SCAN MODE  
5 ] DIGITAL A DATA ELEMENT 0000

6 ] DIGITAL B DATA ELEMENT 00

7 ] ANALOG DATA ELEMENT 00

9 ] MODULE POWER = CONNECT COMMANDS  
10 ] SURVIVAL HEATER POWER = OFF ANTENNA IN COLD CAL POSIT = NO [ 15 ]  
11 ] MODULE TOTALLY OFF = ON ANTENNA IN NADIR POSITION = NO [ 16 ]  
12 ] SCANNER A1 - 1 POWER = ON PLL POWER = YES [ 17 ]  
13 ] SCANNER A1 - 2 POWER = ON COLD CAL POSITION MSB = ZERO [ 18 ]  
14 ] ANTENNA IN WARM CAL POSIT = NO COLD CAL POSITION LSB = ZERO [ 19 ]  
POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 3

TDS / 9



ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE	1	572	SCENE DATA BP	17
2	SYNC SEQUENCE BYTE	2	574	SCENE DATA BP	17
3	SYNC SEQUENCE BYTE	3	576	SCENE DATA BP	17
4	DIGITAL ID AND SERIAL NO	1111111111111111	578	REFLECTOR 1 POSITION	18
5	DIGITAL B DATA BYTE	1001000100000000	580	REFLECTOR 2 POSITION	18
6	DIGITAL B DATA BYTE	0000011000000000	584	REFL 1 POS 18	18
7	DIGITAL B DATA BYTE	0000000000000000	586	REFL 2 POS 18	18
8	DIGITAL B DATA BYTE	162127	588	REFLECTOR 1 POSITION	18
9	REFLECTOR 1 POSITION 1	162127	590	REFLECTOR 2 POSITION	18
10	REFLECTOR 2 POSITION 1	162127	592	REFL 1 POS 18	18
11	REFL 1 POS 1 2ND LOOK	162127	594	REFL 2 POS 18	18
12	REFL 2 POS 1 2ND LOOK	162127	596	SCENE DATA BP	18
13	SCENE DATA BP	1	602	SCENE DATA BP	18
14	SCENE DATA BP	3	604	SCENE DATA BP	18
15	SCENE DATA BP	4	606	SCENE DATA BP	18
16	SCENE DATA BP	5	608	SCENE DATA BP	18
17	SCENE DATA BP	6	610	SCENE DATA BP	18
18	SCENE DATA BP	7	612	SCENE DATA BP	18
19	SCENE DATA BP	8	614	SCENE DATA BP	18
20	SCENE DATA BP	9	616	SCENE DATA BP	18
21	SCENE DATA BP	10	618	SCENE DATA BP	18
22	SCENE DATA BP	11	620	REFLECTOR 1 POSITION	19
23	SCENE DATA BP	12	622	REFLECTOR 2 POSITION	19
24	SCENE DATA BP	13	624	REFL 1 POS 19	2ND LOOK
25	SCENE DATA BP	14	626	REFL 2 POS 19	2ND LOOK
26	SCENE DATA BP	15	628	SCENE DATA BP	19
27	SCENE DATA BP	16	630	SCENE DATA BP	19
28	SCENE DATA BP	17	632	SCENE DATA BP	19
29	SCENE DATA BP	18	634	SCENE DATA BP	19
30	SCENE DATA BP	19	636	SCENE DATA BP	19
31	SCENE DATA BP	20	638	SCENE DATA BP	19
32	SCENE DATA BP	21	640	SCENE DATA BP	19
33	SCENE DATA BP	22	642	SCENE DATA BP	19
34	SCENE DATA BP	23	644	SCENE DATA BP	19
35	SCENE DATA BP	24	646	SCENE DATA BP	19
36	SCENE DATA BP	25	648	SCENE DATA BP	19
37	SCENE DATA BP	26	650	SCENE DATA BP	19
38	SCENE DATA BP	27	652	SCENE DATA BP	19
39	SCENE DATA BP	28	654	SCENE DATA BP	19
40	SCENE DATA BP	29	656	SCENE DATA BP	19
41	SCENE DATA BP	30	658	SCENE DATA BP	19
42	SCENE DATA BP	31	660	SCENE DATA BP	19
43	SCENE DATA BP	32	662	SCENE DATA BP	19
44	REFLECTOR 1 POSITION 2	163179	664	SCENE DATA BP	19
45	REFLECTOR 2 POSITION 2	163179	666	SCENE DATA BP	19
46	REFL 1 POS 2 2ND LOOK	163176	668	SCENE DATA BP	19
47	REFL 2 POS 2 2ND LOOK	163176	670	SCENE DATA BP	19
48	SCENE DATA BP	2	672	SCENE DATA BP	19
49	SCENE DATA BP	3	674	SCENE DATA BP	19
50	SCENE DATA BP	4	676	SCENE DATA BP	19
51	SCENE DATA BP	5	678	SCENE DATA BP	19
52	SCENE DATA BP	6	680	SCENE DATA BP	19
53	SCENE DATA BP	7	682	SCENE DATA BP	19
54	SCENE DATA BP	8	684	SCENE DATA BP	19
55	SCENE DATA BP	9	686	SCENE DATA BP	19
56	SCENE DATA BP	10	688	SCENE DATA BP	19
57	SCENE DATA BP	11	690	SCENE DATA BP	19
58	SCENE DATA BP	12	692	SCENE DATA BP	19
59	SCENE DATA BP	13	694	SCENE DATA BP	19
60	SCENE DATA BP	14	696	SCENE DATA BP	19
61	SCENE DATA BP	15	698	SCENE DATA BP	19
62	SCENE DATA BP	16	700	SCENE DATA BP	19
63	SCENE DATA BP	17	702	SCENE DATA BP	19
64	SCENE DATA BP	18	704	SCENE DATA BP	19
65	SCENE DATA BP	19	706	SCENE DATA BP	19
66	SCENE DATA BP	20	708	SCENE DATA BP	19
67	SCENE DATA BP	21	710	SCENE DATA BP	19
68	SCENE DATA BP	22	712	SCENE DATA BP	19
69	SCENE DATA BP	23	714	SCENE DATA BP	19
70	SCENE DATA BP	24	716	SCENE DATA BP	19
71	SCENE DATA BP	25	718	SCENE DATA BP	19
72	SCENE DATA BP	26	720	SCENE DATA BP	19
73	SCENE DATA BP	27	722	SCENE DATA BP	19
74	SCENE DATA BP	28	724	SCENE DATA BP	19
75	SCENE DATA BP	29	726	SCENE DATA BP	19
76	REFLECTOR 1 POSITION 3	163304	728	SCENE DATA BP	19
77	REFLECTOR 2 POSITION 3	163304	730	SCENE DATA BP	19
78	REFL 1 POS 3 2ND LOOK	163304	732	SCENE DATA BP	19
79	REFL 2 POS 3 2ND LOOK	163304	734	SCENE DATA BP	19
80	SCENE DATA BP	3	736	SCENE DATA BP	19
81	SCENE DATA BP	4	738	SCENE DATA BP	19
82	SCENE DATA BP	5	740	SCENE DATA BP	19
83	SCENE DATA BP	6	742	SCENE DATA BP	19
84	SCENE DATA BP	7	744	SCENE DATA BP	19
85	SCENE DATA BP	8	746	SCENE DATA BP	19
86	SCENE DATA BP	9	748	SCENE DATA BP	19
87	SCENE DATA BP	10	750	SCENE DATA BP	19
88	SCENE DATA BP	11	752	SCENE DATA BP	19
89	SCENE DATA BP	12	754	SCENE DATA BP	19
90	SCENE DATA BP	13	756	SCENE DATA BP	19
91	SCENE DATA BP	14	758	SCENE DATA BP	19
92	SCENE DATA BP	15	760	SCENE DATA BP	19

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94			16496		16499
96			16501		117662
98			17060		119272
100			17066		119146
102			18572		18602
104			19139		19146
106			19282		19272
108			1884		19024
110			20619		13064
112	REFLECTOR 1 POSITION	690	16902	REFLECTOR 1 POSITION	21
114	REFLECTOR 2 POSITION	690	483	REFLECTOR 2 POSITION	21
116	REFL 1 POS 4 2ND LOOK	694	284	REFL 1 POS 21	2ND LOOK
118	REFL 2 POS 4 2ND LOOK	696	480	REFL 2 POS 21	2ND LOOK
120	SCENE DATA BP	698	280	SCENE DATA BP	21
122			16803		16331
124			17116		17122
126			16499		16872
128			16501		16496
130			17668		17063
132			19139		17663
134			19292		19276
136			19123		19158
138			18538		18602
140			19292		19276
142			19123		19158
144			18538		18602
146	REFLECTOR 1 POSITION	690	436	REFLECTOR 1 POSITION	22
148	REFL 1 POS 5 2ND LOOK	692	306	REFL 1 POS 22	2ND LOOK
150	REFL 2 POS 5 2ND LOOK	694	305	REFL 2 POS 22	2ND LOOK
152	SCENE DATA BP	698	309	SCENE DATA BP	22
154			16333		16327
156			16795		16797
158			16877		16874
160			16505		16503
162			17673		17666
164			19046		17661
166			19275		19269
168			19194		19159
170			18625		18595
172			17046		17061
174			17625		17691
176			19275		19269
178			19194		19159
180	REFLECTOR 1 POSITION	6	16906	REFLECTOR 1 POSITION	23
182	REFLECTOR 2 POSITION	6	788	REFLECTOR 2 POSITION	23
184	REFL 1 POS 6 2ND LOOK	588	788	REFL 1 POS 23	2ND LOOK
186	REFL 2 POS 6 2ND LOOK	584	762	REFL 2 POS 23	2ND LOOK
188	SCENE DATA BP	6	584	SCENE DATA BP	23
190			16333		16331
192			16796		168019

AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA 16-MAR-99 07:55:29 PAGE 3  
FULL SCAN MODE

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194		16864	772		16872
196		16518	774		16498
198		16503	776		16498
200		17671	778		17665
202		17039	780		17063
204		19225	782		19283
206		19224	784		19149
208		18674	786		18590
210		20748	788		20639
212	REFLECTOR 1 POSITION	790	REFLECTOR 1 POSITION	1 POSITION	16902
214	REFLECTOR 2 POSITION	792	REFLECTOR 2 POSITION	1 POSITION	3519
216	REFL 1 POS 7 2ND LOOK	794	REFL 1 POS 2 2ND LOOK	2 POSITION	3320
218	REFL 2 POS 7 2ND LOOK	796	REFL 2 POS 2 2ND LOOK	2 POSITION	3314
220	SCENE DATA BP 7	798	SCENE DATA BP 24	2 POSITION	3330
222		800			16796
224		802			16791
226		804			17122
228		806			16876
230		808			17058
232		810			17050
234		812			17665
236		814			19155
238		816			19150
240		818			18602
242		820			18606
244		822			16902
246	REFLECTOR 1 POSITION	824	REFLECTOR 1 POSITION	1 POSITION	3468
248	REFLECTOR 2 POSITION	826	REFLECTOR 2 POSITION	2 POSITION	3469
250	REFL 1 POS 8 2ND LOOK	828	REFL 1 POS 2 2ND LOOK	2 POSITION	3465
252	REFL 2 POS 8 2ND LOOK	830	REFL 2 POS 2 2ND LOOK	2 POSITION	3466
254	SCENE DATA BP 8	832	SCENE DATA BP 25	2 POSITION	3461
256		834			16799
258		836			17116
260		838			16873
262		840			17662
264		842			19271
266		844			17064
268		846			16497
270		848			17064
272		850			19153
274		852			20664
276		854			16903
278		856			3821
280	REFLECTOR 1 POSITION	858	REFLECTOR 1 POSITION	1 POSITION	3622
282	REFLECTOR 2 POSITION	860	REFLECTOR 2 POSITION	2 POSITION	3622
284	REFL 1 POS 9 2ND LOOK	862	REFL 1 POS 2 2ND LOOK	2 POSITION	3817
286	REFL 2 POS 9 2ND LOOK	864	REFL 2 POS 2 2ND LOOK	2 POSITION	3618
288	SCENE DATA BP 9	866	SCENE DATA BP 26	2 POSITION	36330
290		868			16795
292		870			

AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA 16-MAR-99 07:55:29 PAGE 4  
FULL SCAN MODE

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294		872			17119
296		874			16872
298		876			16497
300		880			16500
302		882			17663
304		884			17053
306		886			19271
308		888			18587
310		8890			20673
312	REFLECTOR 1 POSITION	17122			16903
314	REFLECTOR 2 POSITION	16870			3975
316	REFL 1 POS 10 2ND LOOK	16496			3774
318	REFL 2 POS 10 2ND LOOK	17058			3968
320	SCENE DATA BP	19263			3770
322	REFL 1 POS 10 2ND LOOK	19162			3339
324	REFL 2 POS 10 2ND LOOK	18603			16339
326	SCENE DATA BP	18604			16797
328		17124			16875
330		16877			16494
332		16495			16506
334		17062			17666
336		17662			17058
338		17062			19275
340		19145			19150
342		18574			16898
344		19224			20675
346		19226			16898
348	REFLECTOR 1 POSITION	19226			4125
350	REFLECTOR 2 POSITION	19226			3925
352	REFL 1 POS 11 2ND LOOK	19145			4120
354	REFL 2 POS 11 2ND LOOK	19300			3920
356	SCENE DATA BP	19300			16340
358		19324			16803
360		19342			16874
362		19333			16495
364		19336			17666
366		1938			17063
368		1940			19277
370		1942			19151
372		1944			16898
374		1946			20675
376		1948			16898
378		1950			4076
380		1952			4272
382	REFLECTOR 1 POSITION	1954			4073
384	REFLECTOR 2 POSITION	1956			16342
386	REFL 1 POS 12 2ND LOOK	1958			3
388	REFL 2 POS 12 2ND LOOK	1960			CH 13
390	SCENE DATA BP	1960			CH 14
392		1962			CH 15

AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA 16-MAR-99 07:55:29 PAGE 5

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394		16798	972		16812
396		117120	974		17150
398		116868	976		16874
400		116493	980		116494
402		116500	984		117663
404		1170664	986		117067
406		117067	988		119151
408		119142	990		1185818
410		120600	992		120618
412		118592	994		169029
414		116498	996		44226
416	REFLECTOR 1 POSITION	13	REFLECTOR 2 POSITION	30	4424
418	REFLECTOR 2 POSITION	13	REFL 1 POS 13	2ND LOOK	44224
420	REFL 1 POS 13	2ND LOOK	REFL 2 POS 30	2ND LOOK	4230
422	REFL 2 POS 13	2ND LOOK	SCENE DATA BP	30	BP
424	SCENE DATA	BP			
426					
428					
430					
432					
434					
436					
438					
440					
442					
444					
446					
448					
450					
452					
454					
456					
458					
460					
462					
464					
466					
468					
470					
472					
474					
476					
478					
480					
482					
484					
486					
488					
490					
492					

ELEMENT	DESCRIPTION
494	SCENE DATA
495	REFLECTOR 1 POSITION
496	REFLECTOR 2 POSITION
497	REFL 1 POS 1
498	REFL 2 POS 1
499	SCENE DATA BP
500	REFLECTOR 1 POSITION
501	REFLECTOR 2 POSITION
502	REFL 1 POS 1
503	REFL 2 POS 1
504	SCENE DATA BP
505	REFLECTOR 1 POSITION
506	REFLECTOR 2 POSITION
507	REFL 1 POS 1
508	REFL 2 POS 1
509	SCENE DATA BP
510	REFLECTOR 1 POSITION
511	REFLECTOR 2 POSITION
512	REFL 1 POS 1
513	REFL 2 POS 1
514	SCENE DATA BP
515	REFLECTOR 1 POSITION
516	REFLECTOR 2 POSITION
517	REFL 1 POS 1
518	REFL 2 POS 1
519	SCENE DATA BP
520	REFLECTOR 1 POSITION
521	REFLECTOR 2 POSITION
522	REFL 1 POS 1
523	REFL 2 POS 1
524	SCENE DATA BP
525	REFLECTOR 1 POSITION
526	REFLECTOR 2 POSITION
527	REFL 1 POS 1
528	REFL 2 POS 1
529	SCENE DATA BP
530	REFLECTOR 1 POSITION
531	REFLECTOR 2 POSITION
532	REFL 1 POS 1
533	REFL 2 POS 1
534	SCENE DATA BP
535	REFLECTOR 1 POSITION
536	REFLECTOR 2 POSITION
537	REFL 1 POS 1
538	REFL 2 POS 1
539	SCENE DATA BP
540	REFLECTOR 1 POSITION
541	REFLECTOR 2 POSITION
542	REFL 1 POS 1
543	REFL 2 POS 1
544	SCENE DATA BP
545	REFLECTOR 1 POSITION
546	REFLECTOR 2 POSITION
547	REFL 1 POS 1
548	REFL 2 POS 1
549	SCENE DATA BP
550	REFLECTOR 1 POSITION
551	REFLECTOR 2 POSITION
552	REFL 1 POS 1
553	REFL 2 POS 1
554	SCENE DATA BP
555	REFLECTOR 1 POSITION
556	REFLECTOR 2 POSITION
557	REFL 1 POS 1
558	REFL 2 POS 1
559	SCENE DATA BP
560	REFLECTOR 1 POSITION
561	REFLECTOR 2 POSITION
562	REFL 1 POS 1
563	REFL 2 POS 1
564	SCENE DATA BP
565	REFLECTOR 1 POSITION
566	REFLECTOR 2 POSITION
567	REFL 1 POS 1
568	REFL 2 POS 1
569	SCENE DATA BP
570	REFLECTOR 1 POSITION

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16342	20.23	
1092	SCAN MOTOR A1-2	16596	20.30	
1094	FEEDHORN A1-1	16890	20.51	
1096	FEEDHORN A1-2	17147	21.58	
1098	RF MUX A1-1	17016	21.14	
1100	RF MUX A1-2	17948	21.56	
1102	LOCAL OSCILLATOR CHANNEL 3	17056	23.09	
1104	LOCAL OSCILLATOR CHANNEL 4	17056	23.25	
1106	LOCAL OSCILLATOR CHANNEL 5	17473	22.97	
1108	LOCAL OSCILLATOR CHANNEL 6	17500	22.95	
1110	LOCAL OSCILLATOR CHANNEL 7	17666	22.90	
1112	LOCAL OSCILLATOR CHANNEL 8	17535	22.90	
1114	LOCAL OSCILLATOR CHANNEL 15	16949	22.23	
1116	PLL LO #2 CHANNELS 9 THROUGH 14	18370	22.24	
1118	PLL LO #1 CHANNELS 9 THROUGH 14	32767	22.24	
1120	SPARE (NOT USED)	17536	22.86	
1122	MIXER/IF AMPLIFIER CHANNEL 3	17193	21.99	
1124	MIXER/IF AMPLIFIER CHANNEL 4	17314	21.10	
1126	MIXER/IF AMPLIFIER CHANNEL 5	17305	21.06	
1128	MIXER/IF AMPLIFIER CHANNEL 6	17297	21.76	
1130	MIXER/IF AMPLIFIER CHANNEL 7	17080	21.86	
1132	MIXER/IF AMPLIFIER CHANNEL 8	17066	21.11	
1134	MIXER/IF AMPLIFIER CHANNEL 9 THRU 14	17233	21.39	
1136	MIXER/IF AMPLIFIER CHANNEL 15	17483	21.16	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	17892	22.23	
1140	IF AMPLIFIER CHANNEL 9	17500	22.22	
1142	IF AMPLIFIER CHANNEL 10	17150	22.21	
1144	IF AMPLIFIER CHANNEL 11	18854	22.49	
1146	DC/DC CONVERTER	17337	22.40	
1148	IF AMPLIFIER CHANNEL 13	16953	22.11	
1150	IF AMPLIFIER CHANNEL 14	16924	22.11	
1152	IF AMPLIFIER CHANNEL 12	17499	22.11	
1154	RF SHELF A1-1	17229	22.21	
1156	RF SHELF A1-2	16818	22.21	
1158	DETECTOR/PREAMPLIFIER ASSEMBLY	21256	20.60	
1160	A1-1 WARM LOAD 1	21462	21.99	
1162	A1-1 WARM LOAD 2	21505	21.20	
1164	A1-1 WARM LOAD 3	21214	20.04	
1166	A1-1 WARM LOAD 4	21397	20.05	
1168	A1-1 WARM LOAD CENTER	21618	20.09	
1170	A1-2 WARM LOAD 1	21446	20.15	
1172	A1-2 WARM LOAD 2	21476	20.12	
1174	A1-2 WARM LOAD 3	21407	20.18	
1176	A1-2 WARM LOAD 4	21274	20.18	
1178	A1-2 WARM LOAD CENTER	24881	20.04	
1180	TEMP SENSOR REFERENCE VOLTAGE			

DESCRIPTION	STATUS	STATUS	STATUS	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON	ON	ON	ON	ON	ON
SCANNER A1-2 POWER	ON	ON	PLL# 1	PLL# 1	PLL# 1	PLL# 1
POLL POWER	PLL# NO	PLL# NO	PLL# NO	PLL# NO	PLL# NO	PLL# NO
ANTENNA IN WARM CAL POSITION MODE	214	24.9	214	24.9	214	24.9
ANTENNA IN COLD CAL POSITION MODE	214	24.5	214	24.5	214	24.5
ANTENNA IN NADIR POSITION MODE	214	22.0	214	22.0	214	22.0
ANTENNA IN FULL SCAN MODE	214	21.5	214	21.5	214	21.5
SURVIVAL HEATER POWER	YES	YES	OFF	OFF	OFF	OFF
MODULE POWER	OFF	CONNECT	CONNECT	CONNECT	CONNECT	CONNECT
COLD CAL POSITION MSB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
ANALOG DATA	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
A1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9	214	24.9
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5	214	24.5
RF SHELF TEMPERATURE	214	22.0	214	22.0	214	22.0
A1-1 RF SHELF TEMPERATURE	214	21.5	214	21.5	214	21.5
A1-2 WARM LOAD TEMPERATURE	214	23.8	214	23.8	214	23.8
A1-1 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214	23.9
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214	23.9
ANALOG DATA	VALUE	AMPS/VOLTS	VALUE	AMPS/VOLTS	VALUE	AMPS/VOLTS
A1-1 ANTENNA DRIVE MOTOR CURRENT	100	46.60	100	46.60	100	46.60
A1-2 ANTENNA DRIVE MOTOR CURRENT	94	43.80	93	43.34	94	43.80
SIGNAL PROCESSING +15 VDC	168	15.00	168	15.00	168	15.00
ANTENNA DRIVE +15 VDC	171	15.00	171	15.00	170	14.92
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	150	-14.95	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	149	-18.05	157	-18.05	157	-18.05
ANTENNA PROCESSOR +5 VDC	157	5.05	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.05	144	5.05	143	5.02
RECEIVER MIXER / IF +10 VDC	144	5.05	144	5.05	143	5.02
PHASE LOCK LOOP {CHANNEL 9/14}	+15	VDC	167	10.03	167	10.03
PHASE LOCK LOOP {CHANNEL 9/14}	-15	VDC	142	-14.99	142	-14.99
L.O. VOLTAGE CHANNEL 8	VDC	172	14.99	167	14.99	167
L.O. VOLTAGE CHANNEL 7	VDC	170	10.00	171	10.00	171
L.O. VOLTAGE CHANNEL 6	VDC	173	10.00	173	10.00	173
L.O. VOLTAGE CHANNEL 5	VDC	173	10.00	173	10.00	173
L.O. VOLTAGE CHANNEL 4	VDC	172	10.07	172	10.07	172
L.O. VOLTAGE CHANNEL 3	VDC	172	10.08	174	10.08	174
L.O. VOLTAGE CHANNEL 2	VDC	172	10.17	172	10.17	172
PLL# 2 LOCK DETECT	VDC	4	4.32	216	4.32	216
PLL# 1 LOCK DETECT	VDC	4	4.91	167	4.91	167
L.O. VOLTAGE CHANNEL 15	VDC	167	14.91	167	14.91	167

AMSU A1\_17 A1.EXE; 62

AZONIX DATA 16-MAR-99  
FULL SCAN MODE

07:55:29 PAGE 9

PRT TEMPERATURES	A1-1	DEG K	A1-2	DEG K
VARIABLE TARGET	NO. 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 631	42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 67.00 68.00 71.00 26.00	NO. 601 602 603 604 605 606 607 608 609 610 611 612 613 614 630 632	14.00 15.00 16.00 17.00 18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00 26.00 27.00 27.00
FIXED TARGET				
BASEPLATE				
THERMOCOUPLE TEMPERATURES	A1-1	DEG K	A1-2	DEG K
FIXED TARGET SHROUD	NO. 558 559 5550 551 506 507 508 509 516 517 514 515 508 519 521 523 575	5.00 6.00 7.00 8.00 59.000 59.000 60.000 61.000 62.000 63.000 64.000 63.000 64.000 63.000 65.000 73.000 75.00	NO. 537 538 524 525 502 503 511 512 509 510 504 513 520 522 577 581	34.00 35.00 36.00 37.00 30.00 31.00 32.00 33.00 38.00 39.00 61.000 62.000 4.00 10.00 74.00 76.00
VARIABLE TARGET SHROUD				
FIXED TARGET N2				
VARIABLE TARGET N2				
HEATER N2				
FIXED TARGET FLOW METER				
VARIABLE TARGET FLOW METER				
BASEPLATE HEATER N2				
BASEPLATE N2				
BASEPLATE FLOW METER				
ADJUNCT RADIATORS				



TEST DATA SHEET 20  
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014				0016			
02	0048				0050			
03	0082				0084			
04	0116				0118			
05	0150				0152			
06	0184				0186			
07	0218				0220			
08	0252				0254			
09	0286				0288			
10	0320				0322			
11	0354				0356			
12	0388				0390			
13	0422				0424			
14	0456				0458			
15	0490				0492			
16	0524				0526			
17	0558				0560			
18	0592				0594			
19	0626				0628			
20	0660				0662			
21	0694				0696			
22	0728				0730			
23	0762				0764			
24	0796				0798			
25	0830				0832			
26	0864				0866			
27	0890				0900			
28	0932				0934			
29	0966				0968			
30	1000				1002			
CC	1034				1036			
WC	1186			✓	1188			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
T. Harry 3/16/99

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1.EXE 6.2  
[ 5 ] DIGITAL A DATA  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:00:21 SCAN NUMBER 107

BP	REFLECTOR POSITIONS		BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
	LOOK 1	LOOK 2						
1	26	26	1246	1239	17	2454	2452	25
2	179	177	1395	1390	18	2610	2603	26
3	334	328	1545	1542	19	2759	2755	27
4	483	480	1697	1694	20	2910	2907	28
5	635	633	1848	1845	21	3062	3059	29
6	789	784	2001	1997	22	3211	3209	30
7	938	935	2153	2148	23	3365	3361	29
8	1091	1086	16	2303	24	3519	3514	30
[ 21 ] UP	[ 22 ] DOWN					WC	CC	6021

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

7DS20

AMSU A1-17 A1.EXE;62 FULL SCAN MODE P1 16-MAR-99 08:00:28 SCAN NUMBER 108

[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITION 2	BP	LOOK 1	BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
1	16212	16212	9	1043	1040	17	2258	2253	25	3469	3466	
2	16365	16361	10	1194	1191	18	2409	2405	26	3623	3618	
3	1130	1127	11	1346	1343	19	2559	2556	27	3775	3770	
4	284	280	12	1499	1495	20	2711	2708	28	3925	3920	
5	437	432	13	1649	1645	21	2863	2860	29	4077	4073	
6	588	585	14	1802	1798	22	3015	3010	30	4226	4225	
7	739	736	15	1955	1949	23	3167	3163	CC	5820	5820	
8	892	887	16	2105	2101	24	3321	3315	WC	10220	10220	
[ 21 ] UP			[ 22 ] DOWN									

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

**TEST DATA SHEET 21**  
Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Hall 3/16/99

Date

Test Systems Engineer



Mar 17 1999



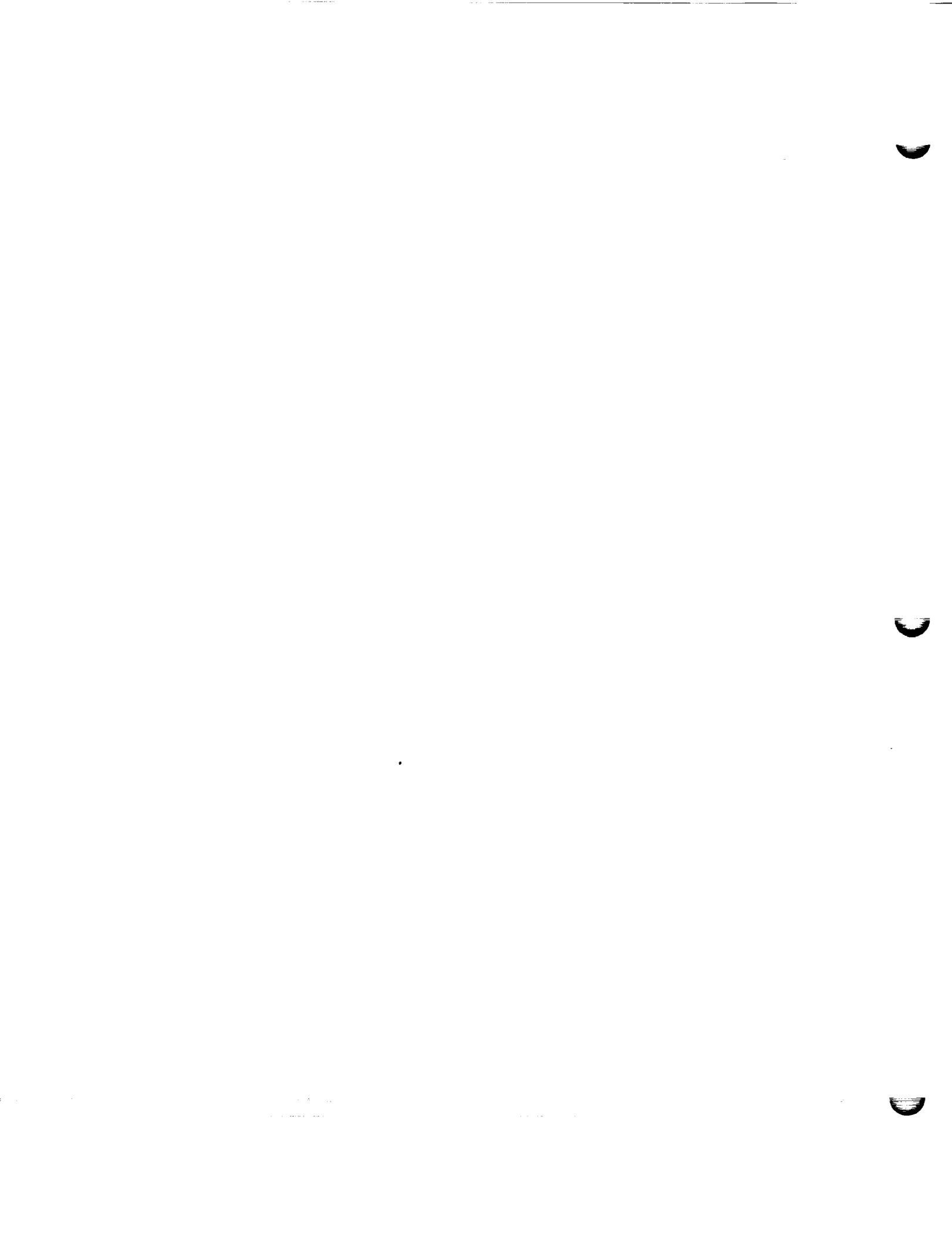
3/16/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1.EXE;62 FULL SCAN MODE P1 16-MAR-99 07:59:45 SCAN NUMBER 103

[ 5 ] DIGITAL A DATA ELEMENT 000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

	BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	16316	9	16305	17	16310	25	16308	
2	16306	10	16310	18	16309	26	16300	
3	16307	11	16309	19	16309	27	16311	
4	16310	12	16303	20	16308	28	16311	
5	16301	13	16317	21	16299	29	16320	
6	16302	14	16307	22	16309	30	16306	
7	16307	15	16312	23	16309	CC	16310	
8	16311	16	16315	24	16313	WC	16300	
[ 21 ] UP	[ 22 ] DOWN							

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2

/DSS 2 /

AMSSU A1-17 A1 EXE;62 FULL SCAN MODE P1 16-MAR-99 08:00:05 SCAN NUMBER 105  
[ 5 ] DIGITAL A DATA ELEMENT 00  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA  
CHANNEL 9  
BP DATA BP DATA BP DATA  
1 17617 9 17618 17 17628 25 17616  
2 17617 10 17618 18 17623 26 17618  
3 17620 11 17615 19 17619 27 17617  
4 17627 12 17619 20 17616 28 17615  
5 17620 13 17624 21 17618 29 17616  
6 17626 14 17624 22 17617 30 17615  
7 17614 15 17625 23 17617 CC 17619  
8 17620 16 17633 24 17619 WC 17611  
[ 21 ] UP [ 22 ] DOWN

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON [ 1 ] RETURN

**TEST DATA SHEET 22 (Sheet 1 of 2)**  
**Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)**

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	P
1092	A1-1 Warm Load 2		25 ± 15	1
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	V

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 22 (Sheet 2 of 2)  
Full Scan Mode Temperature Sensors Section [VI (Paragraph 3.2.4.3.4.1)]

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	↓
1180	Temp Sensor Ref Voltage Count	24882		P

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* = Count of 24,552 +1765, -1308.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 10

R. Haig 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Date

Customer Representative  
(Flight Hardware Only)

Quality Control

3/16/99

Date

AMSU A1-17 A1-EXE;62 FULL SCAN MODE P1 16-MAR-99 08:00:46 SCAN NUMBER 110  
[ 5 ] DIGITAL A DATA ELEMENT 000

[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

NO	DIGITAL A	TEMPERATURES	1 TO 16	DATA	TEMP C
	DATA	TEMP C	NO		
1	SCAN MOTOR A1-1	163.91	20.32	9 LO CHANNEL	5 184.38 23.70
2	SCAN MOTOR A1-2	166.63	20.42	10 LO CHANNEL	6 176.92 22.67
3	FEEDHORN A1-1	170.38	20.80	11 LO CHANNEL	7 177.75 22.73
4	FEEDHORN A1-2	173.77	20.02	12 LO CHANNEL	8 180.71 23.68
5	RF MUX A1-1	172.26	21.69	13 LO CHANNEL	15 179.97 24.16
6	RF MUX A1-2	173.80	22.26	14 PILLO #2 CH	9/14 169.72 21.92
7	LO CHANNEL 3	183.74	23.90	15 PILLO #1 CH	9/14 192.66 26.08
8	LO CHANNEL 4	185.11	24.09	16 PILLO REFERENCE	327.67 52.86
[ 21 ]	UP	[ 22 ] DOWN			

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2 [ 1 ] RETURN

TDS 22

AMSU A1-7 A1 EXE:62 FULL SCAN MODE P1 16-MAR-99 08:00:56 SCAN NUMBER 111

[ 5 ] DIGITAL A DATA ELEMENT 000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 17 TO 32	
NO	DATA TEMP C
17	MIXER IF CH 3 17909
18	MIXER IF CH 4 17582
19	MIXER IF CH 5 17698
20	MIXER IF CH 6 17587
21	MIXER IF CH 7 17628
22	MIXER IF CH 8 17479
23	MIXER IF CH 9/14 16975
[ 24 ] UP	18103 [ 22 ] DOWN

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

AMSU A1-7 A1-EXE;62 FULL SCAN MODE P1 16-MAR-99 08:01:05 SCAN NUMBER 113  
[ 5 ] DIGITAL A DATA ELEMENT 000

[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 31 TO 46					
NO	DATA	TEMP C	NO	DATA	TEMP C
31	IF AMP CH 14	17227	21.98	39	A1-1 WARM LOAD 4
32	IF AMP CH 12	17200	21.92	40	A1-1 WARM LOAD C
33	RF SHELF A1-1	17855	22.88	41	A1-2 WARM LOAD 1
34	RF SHELF A1-2	17631	22.62	42	A1-2 WARM LOAD 2
35	DETECTOR/PREAMP	17034	21.02	43	A1-2 WARM LOAD 3
36	A1-1 WARM LOAD 1	21269	20.01	44	A1-2 WARM LOAD 4
37	A1-1 WARM LOAD 2	21473	20.05	45	A1-2 WARM LOAD C
38	A1-1 WARM LOAD 3	21518	20.07	THERMAL REFERENCE	
[ 21 ] UP	[ 22 ] DOWN	[ 22 ]			24882

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2



**TEST DATA SHEET 23**  
 Digital-A Data Output Warm Cal Mode Synch Sequence,  
 Unit I.D./Serial Number and Digital-B Serial Data Verification  
 Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	4	4	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	
• AMSU A1 Identification Words (data entered in decimal system)			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	
Circle Test: <input checked="" type="radio"/> CPT <input type="radio"/> LPT					
METSAT/AMSU-A1 System P/N IS-1331720			Shop Order: <u>37323X</u> S/N: <u>105</u>		
			<u>R. Haig</u> / <u>3/16/99</u> Test Systems Engineer <small>1999</small>		
Customer Representative (Flight Hardware Only)			<u>MAR 17 1999</u> Date: <u>1999</u> Quality Control Date: <u>3/16/99</u>		



AMSU A1-17 A1.EXE;62 WARM CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

[ 9 ] MODULE POWER = CONNECT COMMANDS  
[ 10 ] SURVIVAL HEATER POWER = OFF ANTENNA IN COLD CAL POSIT = NO [ 15 ]  
[ 11 ] MODULE TOTALLY OFF = ON ANTENNA IN NADIR POSITION = NO [ 16 ]  
[ 12 ] SCANNER A1 - 1 POWER = ON ANTENNA IN FULL SCAN MODE = NO [ 17 ]  
[ 13 ] SCANNER A1 - 2 POWER = ON PLL POWER = PLLO # 1 [ 18 ]  
[ 14 ] ANTENNA IN WARM CAL POSIT = YES COLD CAL POSITION MSB = ZERO [ 19 ]  
POWER [ 4 ] ON COLD CAL POSITION LSB = ZERO [ 20 ]  
SELECT TOUCHSCREEN BUTTON 3 ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN

7DS23



AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA 16-MAR-99 08:30:28 PAGE 1

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	1111111	572	WARM CAL SAMPLE 17	CH 8
2	SYNC SEQUENCE BYTE 2	1111111	574	WARM CAL SAMPLE 17	CH 9
3	SYNC SEQUENCE BYTE 3	1111111	576	WARM CAL SAMPLE 17	CH 10
4	DIGITAL ID AND SERIAL NO	1000100100	580	REFLECTOR 1 POSITION 18	CH 11
5	DIGITAL B DATA BYTE 1	000001100	582	REFLECTOR 2 POSITION 18	CH 12
6	DIGITAL B DATA BYTE 2	000000000	584	REFL 1 POS 18 2ND LOOK	CH 13
7	DIGITAL B DATA BYTE 3	100000000	586	REFL 2 POS 18 2ND LOOK	CH 14
8	DIGITAL B DATA BYTE 4	000000000	588	REFL 2 POS 18 CAL SAMPLE 18	CH 15
9	REFLECTOR 1 POSITION 1	10411	590	REFLECTOR 1 POSITION 18	CH 16
10	REFLECTOR 2 POSITION 1	10411	592	REFL 1 POS 18 2ND LOOK	CH 17
11	REFL 1 POS 1 2ND LOOK	10411	594	REFL 2 POS 18 2ND LOOK	CH 18
12	REFL 2 POS 1 2ND LOOK	10411	596	WARM CAL SAMPLE 18	CH 19
13	WARM CAL SAMPLE 1	1	598	REFLECTOR 1 POSITION 19	CH 20
14	REFLECTOR 1 POSITION 1	10411	600	REFLECTOR 2 POSITION 19	CH 21
15	REFLECTOR 2 POSITION 1	10411	602	REFL 1 POS 19 2ND LOOK	CH 22
16	REFL 1 POS 1 2ND LOOK	10411	604	REFL 2 POS 19 2ND LOOK	CH 23
17	REFL 2 POS 1 2ND LOOK	10411	606	WARM CAL SAMPLE 19	CH 24
18	WARM CAL SAMPLE 1	1	608	REFLECTOR 1 POSITION 19	CH 25
19	REFLECTOR 1 POSITION 1	10411	610	REFLECTOR 2 POSITION 19	CH 26
20	REFLECTOR 2 POSITION 1	10411	612	REFL 1 POS 19 2ND LOOK	CH 27
21	REFL 1 POS 1 2ND LOOK	10411	614	REFL 2 POS 19 2ND LOOK	CH 28
22	REFL 2 POS 1 2ND LOOK	10411	616	WARM CAL SAMPLE 19	CH 29
23	WARM CAL SAMPLE 1	1	618	REFLECTOR 1 POSITION 19	CH 30
24	REFLECTOR 1 POSITION 1	10411	620	REFLECTOR 2 POSITION 19	CH 31
25	REFLECTOR 2 POSITION 1	10411	622	REFL 1 POS 19 2ND LOOK	CH 32
26	REFL 1 POS 1 2ND LOOK	10411	624	REFL 2 POS 19 2ND LOOK	CH 33
27	REFL 2 POS 1 2ND LOOK	10411	626	WARM CAL SAMPLE 19	CH 34
28	WARM CAL SAMPLE 1	1	628	REFLECTOR 1 POSITION 19	CH 35
29	REFLECTOR 1 POSITION 1	10411	630	REFLECTOR 2 POSITION 19	CH 36
30	REFLECTOR 2 POSITION 1	10411	632	REFL 1 POS 19 2ND LOOK	CH 37
31	REFL 1 POS 1 2ND LOOK	10411	634	REFL 2 POS 19 2ND LOOK	CH 38
32	REFL 2 POS 1 2ND LOOK	10411	636	WARM CAL SAMPLE 19	CH 39
33	WARM CAL SAMPLE 1	1	638	REFLECTOR 1 POSITION 19	CH 40
34	REFLECTOR 1 POSITION 1	10411	640	REFLECTOR 2 POSITION 19	CH 41
35	REFLECTOR 2 POSITION 1	10411	642	REFL 1 POS 19 2ND LOOK	CH 42
36	REFL 1 POS 1 2ND LOOK	10411	644	REFL 2 POS 19 2ND LOOK	CH 43
37	REFL 2 POS 1 2ND LOOK	10411	646	WARM CAL SAMPLE 19	CH 44
38	WARM CAL SAMPLE 1	1	648	REFLECTOR 1 POSITION 19	CH 45
39	REFLECTOR 1 POSITION 1	10411	650	REFLECTOR 2 POSITION 19	CH 46
40	REFLECTOR 2 POSITION 1	10411	652	REFL 1 POS 19 2ND LOOK	CH 47
41	REFL 1 POS 1 2ND LOOK	10411	654	REFL 2 POS 19 2ND LOOK	CH 48
42	REFL 2 POS 1 2ND LOOK	10411	656	WARM CAL SAMPLE 19	CH 49
43	WARM CAL SAMPLE 1	1	658	REFLECTOR 1 POSITION 19	CH 50
44	REFLECTOR 1 POSITION 1	10411	660	REFLECTOR 2 POSITION 19	CH 51
45	REFLECTOR 2 POSITION 1	10411	662	REFL 1 POS 19 2ND LOOK	CH 52
46	REFL 1 POS 1 2ND LOOK	10411	664	REFL 2 POS 19 2ND LOOK	CH 53
47	REFL 2 POS 1 2ND LOOK	10411	666	WARM CAL SAMPLE 19	CH 54
48	WARM CAL SAMPLE 1	1	668	REFLECTOR 1 POSITION 19	CH 55
49	REFLECTOR 1 POSITION 1	10411	670	REFLECTOR 2 POSITION 19	CH 56
50	REFLECTOR 2 POSITION 1	10411	672	REFL 1 POS 19 2ND LOOK	CH 57
51	REFL 1 POS 1 2ND LOOK	10411	674	REFL 2 POS 19 2ND LOOK	CH 58
52	REFL 2 POS 1 2ND LOOK	10411	676	WARM CAL SAMPLE 19	CH 59
53	WARM CAL SAMPLE 1	1	678	REFLECTOR 1 POSITION 19	CH 60
54	REFLECTOR 1 POSITION 1	10411	680	REFLECTOR 2 POSITION 19	CH 61
55	REFLECTOR 2 POSITION 1	10411	682	REFL 1 POS 19 2ND LOOK	CH 62
56	REFL 1 POS 1 2ND LOOK	10411	684	REFL 2 POS 19 2ND LOOK	CH 63
57	REFL 2 POS 1 2ND LOOK	10411	686	WARM CAL SAMPLE 19	CH 64
58	WARM CAL SAMPLE 1	1	688	REFLECTOR 1 POSITION 19	CH 65
59	REFLECTOR 1 POSITION 1	10411	690	REFLECTOR 2 POSITION 19	CH 66
60	REFLECTOR 2 POSITION 1	10411	692	REFL 1 POS 19 2ND LOOK	CH 67
61	REFL 1 POS 1 2ND LOOK	10411	694	REFL 2 POS 19 2ND LOOK	CH 68
62	REFL 2 POS 1 2ND LOOK	10411	696	WARM CAL SAMPLE 19	CH 69
63	WARM CAL SAMPLE 1	1	698	REFLECTOR 1 POSITION 19	CH 70
64	REFLECTOR 1 POSITION 1	10411	700	REFLECTOR 2 POSITION 19	CH 71
65	REFLECTOR 2 POSITION 1	10411	702	REFL 1 POS 19 2ND LOOK	CH 72
66	REFL 1 POS 1 2ND LOOK	10411	704	REFL 2 POS 19 2ND LOOK	CH 73
67	REFL 2 POS 1 2ND LOOK	10411	706	WARM CAL SAMPLE 19	CH 74
68	WARM CAL SAMPLE 1	1	708	REFLECTOR 1 POSITION 19	CH 75
69	REFLECTOR 1 POSITION 1	10411	710	REFLECTOR 2 POSITION 19	CH 76
70	REFLECTOR 2 POSITION 1	10411	712	REFL 1 POS 19 2ND LOOK	CH 77
71	REFL 1 POS 1 2ND LOOK	10411	714	REFL 2 POS 19 2ND LOOK	CH 78
72	REFL 2 POS 1 2ND LOOK	10411	716	WARM CAL SAMPLE 19	CH 79
73	WARM CAL SAMPLE 1	1	718	REFLECTOR 1 POSITION 19	CH 80
74	REFLECTOR 1 POSITION 1	10411	720	REFLECTOR 2 POSITION 19	CH 81
75	REFLECTOR 2 POSITION 1	10411	722	REFL 1 POS 19 2ND LOOK	CH 82
76	REFL 1 POS 1 2ND LOOK	10411	724	REFL 2 POS 19 2ND LOOK	CH 83
77	REFL 2 POS 1 2ND LOOK	10411	726	WARM CAL SAMPLE 19	CH 84
78	WARM CAL SAMPLE 1	1	728	REFLECTOR 1 POSITION 19	CH 85
79	REFLECTOR 1 POSITION 1	10411	730	REFLECTOR 2 POSITION 19	CH 86
80	REFLECTOR 2 POSITION 1	10411	732	REFL 1 POS 19 2ND LOOK	CH 87
81	REFL 1 POS 1 2ND LOOK	10411	734	REFL 2 POS 19 2ND LOOK	CH 88
82	REFL 2 POS 1 2ND LOOK	10411	736	WARM CAL SAMPLE 19	CH 89
83	WARM CAL SAMPLE 1	1	738	REFLECTOR 1 POSITION 19	CH 90

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94			16331	672	16336
96			16337	674	16335
98			17442	676	17440
100			16833	678	16833
102			18647	680	18755
104			18647	682	18643
106			18049	684	20075
108			10411	686	10411
110	REFLECTOR 1 POSITION	4	10412	688	REFLECTOR 1 POSITION
112	REFLECTOR 2 POSITION	4	10411	690	REFLECTOR 2 POSITION
114	REFL 1 POS 4 2ND LOOK	4	10412	692	REFL 1 POS 2ND LOOK
116	REFL 2 POS 4 2ND LOOK	4	10411	694	REFL 2 POS 2ND LOOK
118	WARM CAL SAMPLE 4	4	10212	696	WARM CAL SAMPLE 21
120			16177	700	
122			16611	702	
124			16953	704	
126			16781	706	
128			16335	708	
130			16781	710	
132			16335	712	
134			16781	714	
136			16833	716	
138			17437	718	
140			18647	720	
142			20075	722	
144			10411	724	REFLECTOR 1 POSITION
146	REFLECTOR 1 POSITION	5	10412	726	REFLECTOR 2 POSITION
148	REFL 1 POS 5 2ND LOOK	5	10411	728	REFL 1 POS 2ND LOOK
150	REFL 2 POS 5 2ND LOOK	5	10412	730	REFL 2 POS 2ND LOOK
152	WARM CAL SAMPLE 5	5	10212	732	WARM CAL SAMPLE 22
154			16176	734	
156			16614	736	
158			16949	738	
160			16780	740	
162			16330	742	
164			16336	744	
166			17443	746	
168			16837	748	
170			18655	750	
172			20051	752	
174			10411	754	
176			10412	756	REFLECTOR 1 POSITION
178			10411	758	REFLECTOR 2 POSITION
180			10212	760	REFL 1 POS 2ND LOOK
182	REFLECTOR 1 POSITION	6	10411	762	REFL 2 POS 2ND LOOK
184	REFLECTOR 2 POSITION	6	10411	764	WARM CAL SAMPLE 23
186	REFL 1 POS 6 2ND LOOK	6	10212	766	
188	REFL 2 POS 6 2ND LOOK	6	16174	768	
190	WARM CAL SAMPLE 6	6	16613	770	
192			16953	772	

AMSU	A1_17	A1_EXE;62	DIGITAL A DATA WARM CAL MODE	16-MAR-99	08:30:28	PAGE 3
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE	
194						
196						
198						
200						
202						
204						
206						
208						
210						
212	REFLECTOR 1 POSITION	7				
214	REFLECTOR 2 POSITION	7				
216	REFL 1 POS 7	2ND LOOK				
218	REFL 2 POS 7	2ND LOOK				
220	WARM CAL SAMPLE	7				
222						
224						
226						
228						
230						
232						
234						
236						
238						
240						
242						
244						
246						
248	REFLECTOR 1 POSITION	8				
250	REFLECTOR 2 POSITION	8				
252	REFL 1 POS 8	2ND LOOK				
254	REFL 2 POS 8	2ND LOOK				
256	WARM CAL SAMPLE	8				
258						
260						
262						
264						
266						
268						
270						
272						
274						
276						
278						
280	REFLECTOR 1 POSITION	9				
282	REFLECTOR 2 POSITION	9				
284	REFL 1 POS 9	2ND LOOK				
286	REFL 2 POS 9	2ND LOOK				
288	WARM CAL SAMPLE	9				
290						
292						

AMSU A1_17	A1.EXE; 62	DIGITAL A DATA WARM CAL MODE	16-MAR-99	08:30:28	PAGE 4	VALUE
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION		VALUE
294		872	16952	REFLECTOR 1 POSITION 1	CH 5	16953
296		874	16783	REFLECTOR 2 POSITION 1	CH 6	16779
298		876	16331	REFL 1 POS 1	CH 7	16333
300		878	16334	REFL 2 POS 1	CH 8	16337
302		880	17437	REFL 1 POS 2	CH 9	16835
304		882	18642	REFL 2 POS 2	CH 10	16846
306		884	18681	WARM CAL SAMPLE 3	CH 11	18092
308		886	18750		CH 12	
310		888	18604		CH 13	
312		890	18045		CH 14	
314	REFLECTOR 1 POSITION 10	CH 15	16756		CH 15	
316	REFLECTOR 2 POSITION 10	CH 15	10411	REFLECTOR 1 POSITION 2	CH 17	10411
318	REFL 1 POS 10	CH 10	10412	REFLECTOR 2 POSITION 2	CH 27	10412
320	REFL 2 POS 10	CH 10	10411	REFL 1 POS 27	CH 27	10411
322	WARM CAL SAMPLE 10	CH 10	10412	REFL 2 POS 27	CH 27	10412
324		CH 4	16173	WARM CAL SAMPLE 27	CH 3	16183
326		CH 4	16615		CH 4	16609
328		CH 4	16953		CH 5	16954
330		CH 5	16779		CH 6	16779
332		CH 5	16335		CH 7	16335
334		CH 5	16335		CH 8	16335
336		CH 5	17438		CH 9	17440
338		CH 5	17438		CH 10	17440
340		CH 5	16836		CH 11	16829
342		CH 5	16836		CH 12	16829
344		CH 5	18640		CH 13	16838
346		CH 5	18640		CH 14	16838
348		CH 5	18074		CH 15	16838
350	REFLECTOR 1 POSITION 11	CH 15	16759	REFLECTOR 1 POSITION 28	CH 15	16758
352	REFLECTOR 2 POSITION 11	CH 15	10411	REFLECTOR 2 POSITION 28	CH 28	10411
354	REFL 1 POS 11	CH 11	10412	REFL 1 POS 28	CH 28	10412
356	REFL 2 POS 11	CH 11	10411	REFL 2 POS 28	CH 28	10411
358	WARM CAL SAMPLE 11	CH 11	10212	WARM CAL SAMPLE 28	CH 3	16179
360		CH 4	16180		CH 4	16612
362		CH 4	16614		CH 5	16950
364		CH 4	16614		CH 6	16676
366		CH 4	16783		CH 7	16837
368		CH 4	16783		CH 8	17443
370		CH 4	16334		CH 9	17443
372		CH 4	16334		CH 10	17443
374		CH 4	16334		CH 11	17443
376		CH 4	16334		CH 12	17443
378		CH 4	16334		CH 13	17443
380		CH 4	16334		CH 14	17443
382	REFLECTOR 1 POSITION 12	CH 15	16757	REFLECTOR 1 POSITION 29	CH 15	16757
384	REFLECTOR 2 POSITION 12	CH 15	10411	REFLECTOR 2 POSITION 29	CH 29	10411
386	REFL 1 POS 12	CH 12	10212	REFL 1 POS 29	CH 29	10212
388	REFL 2 POS 12	CH 12	10411	REFL 2 POS 29	CH 29	10411
390	WARM CAL SAMPLE 12	CH 3	16176	WARM CAL SAMPLE 29	CH 3	16176

AMSU A1_17	A1.EXE; 62	DIGITAL A DATA WARM CAL MODE	16-MAR-99	08:30:28	PAGE 5
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394			16613	16617	
396			16951	16950	
398			16783	16332	
400			16334	17443	
402			17442	16832	
404			18650	18643	
406			18068	18077	
408			18048	20041	
410			18758	16757	
412			18650	10411	
414			18068	10212	
416			18048	10412	
418	REFLECTOR 1 POSITION	4	16781	10411	
420	REFLECTOR 2 POSITION	5	16313	10412	
422	REFL 1 POS 13	6	16950	10212	
424	REFL 2 POS 13	7	16781	10411	
426	WARM CAL SAMPLE	8	16313	10212	
428		9	16335	10212	
430		10	16781	10146	
432		11	16950	10146	
434		12	16781	10146	
436		13	16335	10146	
438		14	16781	10146	
440		15	16950	10146	
442		16	16781	10146	
444		17	16335	10146	
446		18	16781	10146	
448		19	16950	10146	
450	REFLECTOR 1 POSITION	4	16781	10224	
452	REFLECTOR 2 POSITION	5	16335	10224	
454	REFL 1 POS 14	6	16781	10224	
456	REFL 2 POS 14	7	16950	10224	
458	WARM CAL SAMPLE	8	16335	10224	
460		9	16781	10224	
462		10	16950	10224	
464		11	16781	10224	
466		12	16950	10224	
468		13	16781	10224	
470		14	16950	10224	
472		15	16781	10224	
474		16	16950	10224	
476		17	16781	10224	
478		18	16950	10224	
480		19	16781	10224	
482		10	16950	10224	
484	REFLECTOR 1 POSITION	4	16781	10554	
486	REFLECTOR 2 POSITION	5	16333	10554	
488	REFL 1 POS 15	6	16781	10554	
490	REFL 2 POS 15	7	16950	10554	
492		8	16781	10554	COLD CAL DATA 2

AMSU A1\_17 A1.EXE; 62

DIGITAL A DATA  
WARM CAL MODE

PAGE 6

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	WARM CAL SAMPLE	15	CH	REFLECTOR 1 POSITION	1
496		CH	CH	REFLECTOR 2 POSITION	2
498		CH	CH	REFL 1 POS 1	1
500		CH	CH	REFL 2 POS 1	1
502		CH	CH	REFL 1 POS 2	2
504		CH	CH	REFL 2 POS 2	2
506		CH	CH	WARM CAL SAMPLE 1	1
508		CH	CH	WARM CAL SAMPLE 2	2
510		CH	CH		
512		CH	CH		
514		CH	CH		
516		CH	CH		
518		CH	CH		
520		CH	CH		
522		CH	CH		
524		CH	CH		
526		CH	CH		
528		CH	CH		
530		CH	CH		
532		CH	CH		
534		CH	CH		
536		CH	CH		
538		CH	CH		
540		CH	CH		
542		CH	CH		
544		CH	CH		
546		CH	CH		
548		CH	CH		
550		CH	CH		
552		CH	CH		
554		CH	CH		
556		CH	CH		
558		CH	CH		
560		CH	CH		
562		CH	CH		
564		CH	CH		
566		CH	CH		
568		CH	CH		
570		CH	CH		

AMSU A1_17	A1.EXE;62	DIGITAL WARM MODE	A DATA CAL MODE	16-MAR-99	08:30:28	PAGE 7
ELEMENT	DESCRIPTION			VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1			16486	20.50	
1092	SCAN MOTOR A1-2			16964	21.00	
1094	FEEDHORN A1-1			17882	22.40	
1096	FEEDHORN A1-2			18658	22.46	
1098	RF MUX A1-1			18577	22.47	
1100	LOCAL OSCILLATOR	CHANNEL 3		20206	22.73	
1102	LOCAL OSCILLATOR	CHANNEL 4		19197	22.77	
1104	LOCAL OSCILLATOR	CHANNEL 5		19089	22.77	
1106	LOCAL OSCILLATOR	CHANNEL 6		19842	22.77	
1108	LOCAL OSCILLATOR	CHANNEL 7		19679	22.77	
1110	LOCAL OSCILLATOR	CHANNEL 8		18258	22.77	
1112	LOCAL OSCILLATOR	CHANNEL 15		18258	22.77	
1114	PLL LO #2	CHANNELS 9 THROUGH 14		19258	22.77	
1116	PLL LO #1	CHANNELS 9 THROUGH 14		19258	22.77	
1118	SPARE (NOT USED)			21374	22.77	
1120	MIXER/IF AMPLIFIER CHANNEL 3			32767	23.05	
1122	MIXER/IF AMPLIFIER CHANNEL 4			19424	23.05	
1124	MIXER/IF AMPLIFIER CHANNEL 5			19496	23.05	
1126	MIXER/IF AMPLIFIER CHANNEL 6			18877	23.05	
1128	MIXER/IF AMPLIFIER CHANNEL 7			19085	23.05	
1130	MIXER/IF AMPLIFIER CHANNEL 8			19330	23.05	
1132	MIXER/IF AMPLIFIER CHANNEL 9 THRU 14			18314	23.05	
1134	MIXER/IF AMPLIFIER CHANNEL 15			19650	23.05	
1136	IF AMPLIFIER CHANNEL 11 THRU 14			19700	23.05	
1138	IF AMPLIFIER CHANNEL 9			20136	23.05	
1140	IF AMPLIFIER CHANNEL 10			19757	23.05	
1142	IF AMPLIFIER CHANNEL 11			18712	23.05	
1144	DC/DC CONVERTER			21306	23.05	
1146	IF AMPLIFIER CHANNEL 13			18890	23.05	
1148	IF AMPLIFIER CHANNEL 14			18804	23.05	
1150	IF AMPLIFIER CHANNEL 12			19341	23.05	
1152	IF AMPLIFIER CHANNEL 11			18482	23.05	
1154	RF SHELF A1-1			19358	23.05	
1156	DETECTOR/PREAMPLIFIER ASSEMBLY			18030	23.05	
1160	A1-1 WARM LOAD 1			21415	23.05	
1162	A1-1 WARM LOAD 2			21613	23.05	
1164	A1-1 WARM LOAD 3			21662	23.05	
1166	A1-1 WARM LOAD 4			21368	23.05	
1168	A1-1 WARM LOAD CENTER			21551	23.05	
1170	A1-2 WARM LOAD 1			21993	23.05	
1172	A1-2 WARM LOAD 2			21820	23.05	
1174	A1-2 WARM LOAD 3			21855	23.05	
1176	A1-2 WARM LOAD 4			21781	23.05	
1178	A1-2 WARM LOAD CENTER			21646	23.05	
1180	TEMP SENSOR REFERENCE VOLTAGE			24884	23.05	

DESCRIPTION	STATUS	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON	ON	ON	ON
SCANNER A1-2 POWER	ON	PLL# 1	PLL# 1	PLL# 1
PLL POWER	PLL# 1	YES	YES	YES
ANTENNA IN WARM CAL POSITION MODE	214	24.9	214	24.9
ANTENNA IN COLD CAL POSITION MODE	214	24.5	214	24.5
ANTENNA IN NADIR POSITION MODE	215	22.0	214	22.0
ANTENNA IN FULL SCAN MODE	215	22.9	215	22.9
SURVIVAL HEATER POWER	NO	NO	NO	NO
MODULE POWER	NO	NO	NO	NO
COLD CAL POSITION MSB	OFF	CONNECT	OFF	CONNECT
COLD CAL POSITION LSB	ZERO	ZERO	ZERO	ZERO
ANALOG DATA	VALUE	DEG C	VALUE	DEG C
A1-1 SCANNER MOTOR TEMPERATURE	214	214	214	214
A1-2 SCANNER MOTOR TEMPERATURE	214	22.4	214	22.4
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	214	22.9	214	22.9
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9
ANALOG DATA	VALUE	AMPS/VOLTS	VALUE	AMPS/VOLTS
A1-1 ANTENNA DRIVE MOTOR CURRENT	4	1.86	4	1.86
A1-2 ANTENNA DRIVE MOTOR CURRENT	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	14.91	14.91
ANTENNA DRIVE +15 VDC	167	14.66	14.66	14.66
SIGNAL PROCESSING -15 VDC	149	-15.05	14.9	-14.95
ANTENNA DRIVE -15 VDC	149	-14.95	14.9	-14.95
RECEIVER AMPLIFIER +8 VDC	157	8.05	15.7	15.7
SIGNAL PROCESSOR +5 VDC	143	5.07	14.3	14.3
ANTENNA DRIVE +5 VDC	143	5.02	14.3	14.3
RECEIVER MIXER / IF +10 VDC	167	10.03	16.7	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	+15	VDC	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	-15	VDC	167	10.03
L.O. VOLTAGE CHANNEL 8	VDC	14.2	-14.99	14.99
L.O. VOLTAGE CHANNEL 7	VDC	17.2	-10.00	10.00
L.O. VOLTAGE CHANNEL 6	VDC	17.0	-10.06	10.06
L.O. VOLTAGE CHANNEL 3	VDC	17.3	-10.00	10.00
L.O. VOLTAGE CHANNEL 4	VDC	17.3	-10.00	10.00
L.O. VOLTAGE CHANNEL 5	VDC	17.1	-10.11	10.11
PLL #2 LOCK DETECT	VDC	1.4	0.08	0.08
PLL #1 LOCK DETECT	VDC	2.18	4.36	4.36
L.O. VOLTAGE (CHANNEL 15)	VDC	167	14.91	14.91

AMSIU A1\_17 A1.EXE; 62

AZONIX DATA 16-MAR-99 08:30:28 PAGE 9

## PRT TEMPERATURES

A1 - 1 DEG K

VARIABLE TARGET	NO.	DEG K
	611	41.00
	615	43.00
	617	44.00
	618	45.00
	619	46.00
	620	47.00
	621	48.00
FIXED TARGET	622	49.00
	623	50.00
	624	51.00
	625	52.00
	626	53.00
	627	56.00
	628	68.00
	629	71.00
BASEPLATE	631	26.00

## THERMOCOUPLE TEMPERATURES

A1 - 1 DEG K

FIXED TARGET SHROUD	NO.	DEG K
VARIABLE TARGET SHROUD	558	5.00
	559	6.00
	550	7.00
	551	8.00
FIXED TARGET N2	506	57.00
	507	58.00
VARIABLE TARGET N2	516	59.00
	517	60.00
HEATER N2	514	61.00
	515	62.00
FIXED TARGET FLOW METER	508	63.00
VARIABLE TARGET FLOW METER	518	64.00
BASEPLATE HEATER N2	519	63.00
BASEPLATE N2	521	59.00
BASEPLATE FLOW METER	523	65.00
ADJUNCT RADIATORS	575	73.00
	579	75.00

A1 - 2 DEG K

VARIABLE TARGET	NO.	DEG K
	601	14.00
	602	15.00
	603	16.00
	604	17.00
	605	18.00
	606	19.00
	607	20.00
FIXED TARGET	608	21.00
	609	22.00
	610	23.00
	611	24.00
	612	25.00
	613	69.00
	614	70.00
BASEPLATE	630	72.00
	632	27.00

VARIABLE TARGET	NO.	DEG K
	537	34.00
	538	35.00
	524	36.00
	525	37.00
	502	30.00
	503	31.00
	511	32.00
	512	33.00
	509	38.00
	510	39.00
	504	61.00
	513	62.00
	520	64.00
	522	10.00
	577	74.00
	581	76.00



TEST DATA SHEET 24

Reflector Position Warm Cal Mode Section [IV] and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2 and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			P
15	3.2.4.3.4.4			P

WC = Warm Cal

15 = Nadir Position

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			P
15	3.2.4.3.4.4			P

WC = Warm Cal

15 = Nadir Position

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 101

R. Heis 3/16/99

Test Systems Engineer

Date

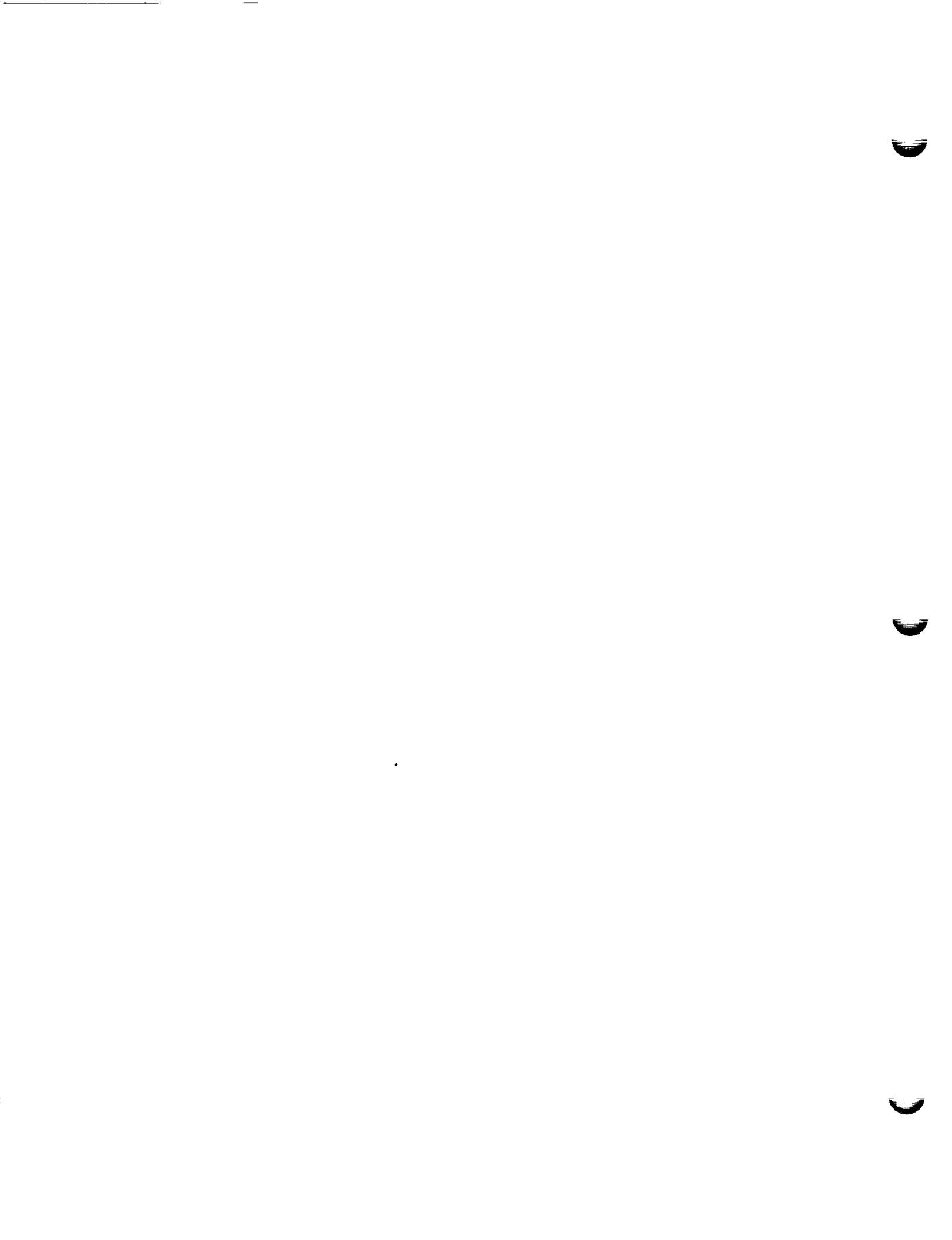
 Customer Representative  
(Flight Hardware Only)

MAR 17 1999

Date

Quality Control

Date



AMSU A1-17 A1.EXE;62 WARM CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS		BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
				LOOK 1	LOOK 2						
1	10417	10417	9	10417	10417	17	10417	10417	25	10417	10417
2	10417	10417	10	10417	10417	18	10417	10417	26	10417	10417
3	10417	10417	11	10417	10417	19	10417	10417	27	10417	10417
4	10417	10417	12	10417	10417	20	10417	10417	28	10417	10417
5	10417	10417	13	10417	10417	21	10417	10417	29	10417	10417
6	10417	10417	14	10417	10417	22	10417	10417	30	10417	10417
7	10417	10417	15	10417	10417	23	10417	10417	CC	0	0
8	10417	10417	16	10417	10417	24	10417	10417	WC	0	0
[ 21 ] UP			[ 22 ] DOWN								

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2

7DS 24

P1 16-MAR-99 08:03:47 SCAN NUMBER 132

AMSU A1-17 A1;EXE;62 WARM CAL MODE

[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS	BP	LOOK 1	BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
1	10214	10214	9	10214	10214	17	10214	10214	25	10214	10214	10214
2	10214	10214	10	10214	10214	18	10214	10214	26	10214	10214	10214
3	10214	10214	11	10214	10214	19	10214	10214	27	10214	10214	10214
4	10214	10214	12	10214	10214	20	10214	10214	28	10214	10214	10214
5	10214	10214	13	10214	10214	21	10214	10214	29	10214	10214	10214
6	10214	10214	14	10214	10214	22	10214	10214	30	10214	10214	10214
7	10214	10214	15	10214	10214	23	10214	10214	CC	0	0	0
8	10214	10214	16	10214	10214	24	10214	10214	WC	0	0	0
[ 21 ]	UP			[ 22 ]	DOWN							

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2 SCAN NUMBER 133

[ 1 ] RETURN

AMSU A1-17 A1.EXE;62 NADIR MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P2 16-MAR-99 08:45:50 SCAN NUMBER 6

BP	LOOK 1	LOOK 2	BP	REFLECTOR LOOK 1	POSITIONS LOOK 2	BP	LOOK 1	LOOK 2
1	2157	2157	9	2157	17	2157	2157	2157
2	2157	2157	10	2157	18	2157	2157	2157
3	2157	2157	11	2157	19	2157	2157	2157
4	2157	2157	12	2157	20	2157	2157	2157
5	2157	2157	13	2157	21	2157	2157	2157
6	2157	2157	14	2157	22	2157	2157	2157
7	2157	2157	15	2157	23	2157	2157	2157
8	2157	2157	16	2157	24	2157	2157	0
[ 21 ] UP			[ 22 ] DOWN					0

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2 [ 1 ] RETURN

77524

8

AMSU A1-117 A1:EXE;62 NADIR MODE

[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

P2 16-MAR-99 08:46:03

SCAN NUMBER

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITION 2	POSITIONS 1	BP	LOOK 2	BP	LOOK 1	LOOK 2	
1	1957	1957	9	1957	1957	17	1957	1957	25	1957	1957
2	1957	1957	10	1957	1957	18	1957	1957	26	1957	1957
3	1957	1957	11	1957	1957	19	1957	1957	27	1957	1957
4	1957	1957	12	1957	1957	20	1957	1957	28	1957	1957
5	1957	1957	13	1957	1957	21	1957	1957	29	1957	1957
6	1957	1957	14	1957	1957	22	1957	1957	30	1957	1957
7	1957	1957	15	1957	1957	23	1957	1957	CC	0	0
8	1957	1957	16	1957	1957	24	1957	1957	WC	0	0
[ 21 ] UP			[ 22 ] DOWN								

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 25  
Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.2)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038	0			1050	0		
WC	1190	0		↓	1202	0		↓

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
R. Gary 3/16/99

Test Systems Engineer

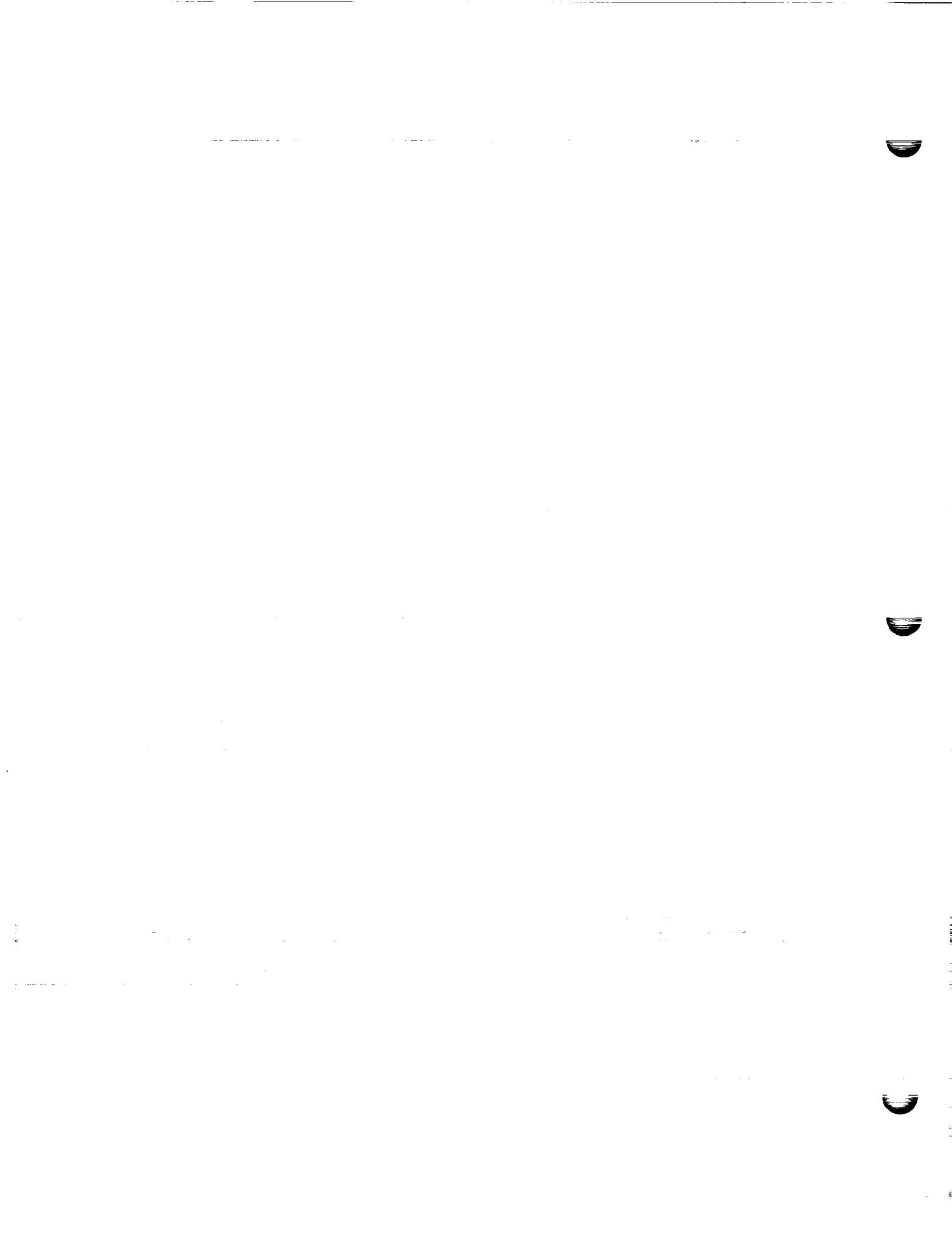
Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1.EXE;62 WARM CAL MODE P1 16-MAR-99 08:03:14 SCAN NUMBER 128  
[ 5 ] DIGITAL A DATA ELEMENT 000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA  
CHANNEL 3  
BP DATA BP DATA BP DATA  
1 16282 9 16280 17 16277 25 16278  
2 16280 10 16283 18 16282 26 16279  
3 16278 11 16282 19 16279 27 16284  
4 16276 12 16286 20 16279 28 16286  
5 16286 13 16285 21 16283 29 16278  
6 16278 14 16282 22 16282 30 16282  
7 16285 15 16284 23 16281 CC 0  
8 16282 16 16283 24 16283 WC 0

[ 21 ] UP [ 22 ] DOWN

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

72525

AMSU A1-17 A1:EXE;62 WARM CAL MODE P1 16-MAR-99 08:03:30 SCAN NUMBER 130  
[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

	RADIOMETRIC DATA CHANNEL 9					
	BP	DATA	BP	DATA	BP	DATA
1	17585	9	17584	17	17586	25
2	17586	10	17590	18	17584	26
3	17589	11	17586	19	17588	27
4	17586	12	17588	20	17582	28
5	17588	13	17584	21	17585	29
6	17587	14	17586	22	17588	30
7	17581	15	17584	23	17588	CC
8	17588	16	17585	24	17583	WC
[ 21 ] UP	[ 22 ] DOWN					0

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 26 (Sheet 1 of 2)  
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	✓
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	✓

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)



TEST DATA SHEET 26 (Sheet 2 of 2)  
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	↓

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* = Count of 24,552 +1765,-1308.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234S/N: R.H. 105

Test Systems Engineer

Date



MAR 17 1999



3/14/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1 EXE:62 WARM CAL MODE  
 [ 5 ] DIGITAL A DATA ELEMENT 0000 P1 16-MAR-99 08:04:08 SCAN NUMBER 135  
 [ 6 ] DIGITAL B DATA ELEMENT 00  
 [ 7 ] ANALOG DATA ELEMENT 00

NO	DIGITAL A DATA	TEMP C	TEMPERATURES NO	1 TO 16	DATA	TEMP C
1	SCAN MOTOR A1-1	16403	20.34	9 LO CHANNEL 5	18670	24.15
2	SCAN MOTOR A1-2	16690	20.48	10 LO CHANNEL 6	17815	22.91
3	FEEDHORN A1-1	17144	21.00	11 LO CHANNEL 7	17938	23.04
4	FEEDHORN A1-2	17539	20.33	12 LO CHANNEL 8	18314	24.15
5	RF MUX A1-1	17406	22.03	13 LO CHANNEL 15	18256	24.15
6	RF MUX A1-2	17617	22.71	14 PILLO #2 CH 9/14	17084	22.13
7	LO CHANNEL 3	18623	24.38	15 PILLO #1 CH 9/14	19678	26.87
8	LO CHANNEL 4	18769	24.59	16 PILLO REFERENCE	32767	52.86
[ 21 ] UP	[ 22 ] DOWN					

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
 SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE:62 WARM CAL MODE  
 [ 5 ] DIGITAL A DATA ELEMENT 0000  
 [ 6 ] DIGITAL B DATA ELEMENT 00  
 [ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:04:18 SCAN NUMBER 136

DIGITAL A TEMPERATURES 17 TO 32		DATA		TEMP C		DATA		TEMP C	
NO		NO		NO		NO		NO	
17	MIXER IF CH 3	18146		23.16		25	IF AMP CH 11/14	18258	23.99
18	MIXER IF CH 4	17824		23.30		26	IF AMP CH 9	18677	24.00
19	MIXER IF CH 5	17939		23.25		27	IF AMP CH 10	18287	24.20
20	MIXER IF CH 6	17755		22.62		28	IF AMP CH 11	17576	22.30
21	MIXER IF CH 7	17829		22.87		29	DC/DC CONVERTER	19819	26.46
22	MIXER IF CH 8	17725		23.33		30	IF AMP CH 13	17761	22.38
23	MIXER IF CH 9/14	17148		22.23		31	IF AMP CH 14	17377	22.27
24	MIXER IF CH 15	18326	[ 22 ] UP	24.32	[ 22 ] DOWN	32	IF AMP CH 12	17348	22.20

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
 SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1-EXE:62 WARM CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:04:27 SCAN NUMBER 137

NO	DIGITAL A	TEMPERATURES	31 TO 46	DATA	TEMP C
31	IF AMP CH 14	17383	22.28	39	A1-1 WARM LOAD 4 21239
32	IF AMP CH 12	17353	22.21	40	A1-1 WARM LOAD C 21425
33	RF SHELF A1-1	18058	23.26	41	A1-2 WARM LOAD C 21683
34	RF SHELF A1-2	17858	23.05	42	A1-2 WARM LOAD 1 21515
35	DETECTOR/PREAMP	17161	22.26	43	A1-2 WARM LOAD 2 21542
36	A1-1 WARM LOAD 1	21283	20.04	44	A1-2 WARM LOAD 3 21474
37	A1-1 WARM LOAD 2	21481	20.06	45	A1-2 WARM LOAD C 21344
38	A1-1 WARM LOAD 3	21532	20.09		
[ 21 ] UP	[ 22 ] DOWN	[ 22 ]	THERMAL REFERENCE 24882		

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2



**TEST DATA SHEET 27**  
 Digital-A Data Output Cold Cal Mode Synch Sequence,  
 Unit I.D./Serial Number and Digital-B Serial Data Verification  
 Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.3)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	8	8	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	
* AMSU A1 Identification Words (data entered in decimal system)			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	
Circle Test: <input checked="" type="radio"/> CPT <input type="radio"/> LPT					
METSAT/AMSU-A1 System P/N IS-1331720			Shop Order: <u>373234</u>	S/N: <u>105</u>	
			<u>R. Haig 3/16/99</u>		
			Test Systems Engineer	Date	
			<u>MAR 17 1999</u>	<u>3/14/99</u>	
Customer Representative (Flight Hardware Only)			Date	Quality Control	Date



AMSU A1-17 A1:EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

COMMANDS  
[ 9 ] MODULE POWER = CONNECT  
[ 10 ] SURVIVAL HEATER POWER = OFF  
[ 11 ] MODULE TOTALLY OFF = ON  
[ 12 ] SCANNER A1 - 1 POWER = ON  
[ 13 ] SCANNER A1 - 2 POWER = ON  
[ 14 ] ANTENNA IN WARM CAL POSIT = NO  
POWER [ 4 ] ON SCREEN ONLY . [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 3

TDS27



AMSU A1\_17 A1.EXE;62

		DIGITAL A DATA COLD CAL MODE	16-MAR-99	08:10:05	PAGE 1
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	572	COLD CAL SAMPLE 17	CH 8
2	SYNC SEQUENCE BYTE 2	11111111	574	COLD CAL SAMPLE 17	CH 9
3	SYNC SEQUENCE BYTE 3	11111111	576		CH 10
4	UNIT ID AND SERIAL NO	000010001	578		CH 11
5	DIGITAL B DATA BYTE 1	000011000	580		CH 12
6	DIGITAL B DATA BYTE 2	000001000	582		CH 13
7	DIGITAL B DATA BYTE 3	000000000	584	REFLECTOR 1 POSITION 18	CH 14
8	DIGITAL B DATA BYTE 4	000000000	586	REFLECTOR 2 POSITION 18	CH 15
9	REFLECTOR 1 POSITION 1	6013	588	REFL 1 POS 18 2ND LOOK	CH 16
10	REFLECTOR 2 POSITION 1	5812	590	REFL 2 POS 18 2ND LOOK	CH 17
11	REFL 1 POS 1 2ND LOOK	5913	592	COLD CAL SAMPLE 18	CH 18
12	REFL 2 POS 1 2ND LOOK	5912	594		CH 19
13	COLD CAL SAMPLE 1	116719	596		CH 20
14		1167052	600		CH 21
15		116828	602		CH 22
16		116416	604		CH 23
17		116425	608		CH 24
18		116947	610		CH 25
19		116440	612		CH 26
20		116719	614		CH 27
21		116427	616		CH 28
22		116824	618		CH 29
23		116947	620	REFLECTOR 1 POSITION 19	CH 30
24		116425	622	REFLECTOR 2 POSITION 19	CH 31
25		116947	624	REFL 1 POS 19 2ND LOOK	CH 32
26		116040	626	REFL 2 POS 19 2ND LOOK	CH 33
27		116828	628	COLD CAL SAMPLE 19	CH 34
28		118362	630		CH 35
29		116828	632		CH 36
30		116040	634		CH 37
31		116828	636		CH 38
32		116418	638		CH 39
33		116427	640		CH 40
34		116715	642		CH 41
35		116828	644		CH 42
36		116418	646		CH 43
37		116427	648		CH 44
38		116951	650		CH 45
39		116942	652		CH 46
40		116921	654	REFLECTOR 1 POSITION 20	CH 47
41		118366	656	REFLECTOR 2 POSITION 20	CH 48
42	REFLECTOR 1 POSITION 2	6012	658	REFL 1 POS 20 2ND LOOK	CH 49
43	REFLECTOR 2 POSITION 2	5813	660	REFL 2 POS 20 2ND LOOK	CH 50
44	REFL 1 POS 2 2ND LOOK	6013	662	COLD CAL SAMPLE 20	CH 51
45	REFL 2 POS 2 2ND LOOK	5812	664		CH 52
46	COLD CAL SAMPLE 2	116713	666		CH 53
47		1167053	668		CH 54
48		116826	670		CH 55
49		116826	672		CH 56
50		116826	674		CH 57
51		116826	676		CH 58
52		116826	678		CH 59
53		116826	680		CH 60
54		116826	682		CH 61
55		116826	684		CH 62
56		116826	686		CH 63
57		116826	688		CH 64
58		116826	690		CH 65

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94			16414	REFLECTOR 1 POSITION	CH 7
96		672	16425	REFLECTOR 2 POSITION	CH 8
98		674	16446	REFL 1 POS 4	CH 9
100		676	16448	REFL 2 POS 4	CH 10
102		678	16945	REFL 1 POS 2ND LOOK	CH 11
104		680	16946	REFL 2 POS 2ND LOOK	CH 12
106		682	18918	COLD CAL SAMPLE 3	CH 13
108		684	20405		CH 14
110		686	18355		CH 15
112		688	19042		CH 16
114		690	16828	REFLECTOR 1 POSITION	CH 17
116		692	58123	REFLECTOR 2 POSITION	CH 18
118		694	60132	REFL 1 POS 21	CH 19
120		696	58122	REFL 2 POS 21	CH 20
122		698	58121	2ND LOOK	CH 21
124		700	58120	2ND LOOK	CH 22
126		702	58121	COLD CAL SAMPLE 21	CH 23
128		704	58120		CH 24
130		706	58121		CH 25
132		708	58120		CH 26
134		710	58121		CH 27
136		712	58120		CH 28
138		714	58121		CH 29
140		716	58120		CH 30
142		718	58121		CH 31
144		720	58120		CH 32
146		722	58121	REFLECTOR 1 POSITION	CH 33
148		724	58122	REFLECTOR 2 POSITION	CH 34
150		726	58123	REFL 1 POS 22	CH 35
152		728	58122	REFL 2 POS 22	CH 36
154		730	58123	2ND LOOK	CH 37
156		732	58122	2ND LOOK	CH 38
158		734	58123	COLD CAL SAMPLE 22	CH 39
160		736	58124		CH 40
162		738	58125		CH 41
164		740	58126		CH 42
166		742	58127		CH 43
168		744	58128		CH 44
170		746	58129		CH 45
172		748	58130		CH 46
174		750	58131		CH 47
176		752	58132		CH 48
178		754	58133		CH 49
180		756	58134		CH 50
182		758	58135	REFLECTOR 1 POSITION	CH 51
184		760	58136	REFLECTOR 2 POSITION	CH 52
186		762	58137	REFL 1 POS 23	CH 53
188		764	58138	REFL 2 POS 23	CH 54
190		766	58139	2ND LOOK	CH 55
192		768	58140	COLD CAL SAMPLE 23	CH 56
		770	58141		CH 57
		772	58142		CH 58
		774	58143		CH 59
		776	58144		CH 60
		778	58145		CH 61
		780	58146		CH 62
		782	58147		CH 63
		784	58148		CH 64
		786	58149		CH 65
		788	58150		CH 66
		790	58151		CH 67
		792	58152		CH 68
		794	58153		CH 69
		796	58154		CH 70
		798	58155		CH 71
		800	58156		CH 72
		802	58157		CH 73
		804	58158		CH 74
		806	58159		CH 75
		808	58160		CH 76
		810	58161		CH 77
		812	58162		CH 78
		814	58163		CH 79
		816	58164		CH 80
		818	58165		CH 81
		820	58166		CH 82
		822	58167		CH 83
		824	58168		CH 84
		826	58169		CH 85
		828	58170		CH 86
		830	58171		CH 87
		832	58172		CH 88
		834	58173		CH 89
		836	58174		CH 90
		838	58175		CH 91
		840	58176		CH 92
		842	58177		CH 93
		844	58178		CH 94
		846	58179		CH 95
		848	58180		CH 96
		850	58181		CH 97
		852	58182		CH 98
		854	58183		CH 99
		856	58184		CH 100
		858	58185		CH 101
		860	58186		CH 102
		862	58187		CH 103
		864	58188		CH 104
		866	58189		CH 105
		868	58190		CH 106
		870	58191		CH 107
		872	58192		CH 108
		874	58193		CH 109
		876	58194		CH 110
		878	58195		CH 111
		880	58196		CH 112
		882	58197		CH 113
		884	58198		CH 114
		886	58199		CH 115
		888	58200		CH 116
		890	58201		CH 117
		892	58202		CH 118
		894	58203		CH 119
		896	58204		CH 120
		898	58205		CH 121
		900	58206		CH 122
		902	58207		CH 123
		904	58208		CH 124
		906	58209		CH 125
		908	58210		CH 126
		910	58211		CH 127
		912	58212		CH 128
		914	58213		CH 129
		916	58214		CH 130
		918	58215		CH 131
		920	58216		CH 132
		922	58217		CH 133
		924	58218		CH 134
		926	58219		CH 135
		928	58220		CH 136
		930	58221		CH 137
		932	58222		CH 138
		934	58223		CH 139
		936	58224		CH 140
		938	58225		CH 141
		940	58226		CH 142
		942	58227		CH 143
		944	58228		CH 144
		946	58229		CH 145
		948	58230		CH 146
		950	58231		CH 147
		952	58232		CH 148
		954	58233		CH 149
		956	58234		CH 150
		958	58235		CH 151
		960	58236		CH 152
		962	58237		CH 153
		964	58238		CH 154
		966	58239		CH 155
		968	58240		CH 156
		970	58241		CH 157
		972	58242		CH 158
		974	58243		CH 159
		976	58244		CH 160
		978	58245		CH 161
		980	58246		CH 162
		982	58247		CH 163
		984	58248		CH 164
		986	58249		CH 165
		988	58250		CH 166
		990	58251		CH 167
		992	58252		CH 168
		994	58253		CH 169
		996	58254		CH 170
		998	58255		CH 171
		1000	58256		CH 172
		1002	58257		CH 173
		1004	58258		CH 174
		1006	58259		CH 175
		1008	58260		CH 176
		1010	58261		CH 177
		1012	58262		CH 178
		1014	58263		CH 179
		1016	58264		CH 180
		1018	58265		CH 181
		1020	58266		CH 182
		1022	58267		CH 183
		1024	58268		CH 184
		1026	58269		CH 185
		1028	58270		CH 186
		1030	58271		CH 187
		1032	58272		CH 188
		1034	58273		CH 189
		1036	58274		CH 190
		1038	58275		CH 191
		1040	58276		CH 192

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		DIGITAL A DATA COLD CAL MODE	16-MAR-99	08:10:05	PAGE	3
ELEMENT	DESCRIPTION	ELEMENT	ELEMENT	DESCRIPTION	ELEMENT	VALUE
194		772	774	REFLECTOR 1 POSITION	CH	6
198		776	780	REFLECTOR 2 POSITION	CH	7
200		782	784	REFL 1 POS 24	CH	8
202		786	788	REFL 2 POS 24	CH	9
204		20397	790	COLD CAL SAMPLE 24	CH	10
206		16829	792	REFLECTOR 1 POSITION	CH	11
208		16420	794	REFLECTOR 2 POSITION	CH	12
210	REFLECTOR 1 POSITION	16426	796	REFL 1 POS 24	CH	13
212	REFLECTOR 2 POSITION	17547	798	REFL 2 POS 24	CH	14
214	REFL 1 POS 7 2ND LOOK	19041	800	COLD CAL SAMPLE 24	CH	15
216	REFL 2 POS 7 2ND LOOK	18361	802		CH	16
218	COLD CAL SAMPLE 7	20397	804		CH	17
220		16829	806		CH	18
222		16412	808		CH	19
224		6012	810		CH	20
226		5812	812		CH	21
228		5812	814		CH	22
230		5812	816		CH	23
232		5812	818		CH	24
234		5812	820		CH	25
236		5812	822		CH	26
238		5812	824		CH	27
240		5812	826		CH	28
242		5812	828		CH	29
244		5812	830		CH	30
246	REFLECTOR 1 POSITION	17549	832		CH	31
248	REFLECTOR 2 POSITION	19036	834		CH	32
250	REFL 1 POS 8 2ND LOOK	18927	836		CH	33
252	REFL 2 POS 8 2ND LOOK	18360	838		CH	34
254	COLD CAL SAMPLE 8	20402	840		CH	35
256		16829	842		CH	36
258		16412	844		CH	37
260		17547	846		CH	38
262		16951	848		CH	39
264		16417	850		CH	40
266		16427	852		CH	41
268		17547	854		CH	42
270		16951	856		CH	43
272		16417	858		CH	44
274		18936	860		CH	45
276		20402	862		CH	46
278		16828	864		CH	47
280		16013	866		CH	48
282	REFLECTOR 1 POSITION	5812	868		CH	49
284	REFLECTOR 2 POSITION	5812	870		CH	50
286	REFL 1 POS 9 2ND LOOK	6013	872		CH	51
288	REFL 2 POS 9 2ND LOOK	5812	874		CH	52
290	COLD CAL SAMPLE 9	5812	876		CH	53
292		16268	878		CH	54
		16715	880		CH	55

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294			CH 5	17058	17056
296			CH 6	16827	16825
298			CH 7	16417	16415
300			CH 8	16427	16425
302			CH 9	16942	16946
304			CH 10	19042	18925
306			CH 11	18924	18928
308			CH 12	18924	18928
310			CH 13	18924	18928
312			CH 14	18924	18928
314	REFLECTOR 1 POSITION	CH 15	872	874	876
316	REFLECTOR 2 POSITION	CH 10	892	884	886
318	REFL 1 POS 10 2ND LOOK	CH 10	894	886	888
320	REFL 2 POS 10 2ND LOOK	CH 10	896	898	900
322	COLD CAL SAMPLE 10	CH 10	904	906	908
324			16828	16820	16812
326			16813	16812	16813
328			5812	5812	5812
330			6012	6012	6012
332			5813	5813	5813
334			5814	5814	5814
336			5815	5815	5815
338			5816	5816	5816
340			5817	5817	5817
342			5818	5818	5818
344			5819	5819	5819
346			5820	5820	5820
348			5821	5821	5821
350	REFLECTOR 1 POSITION	CH 11	16425	16425	16425
352	REFLECTOR 2 POSITION	CH 11	16425	16425	16425
354	REFL 1 POS 11 2ND LOOK	CH 11	16425	16425	16425
356	REFL 2 POS 11 2ND LOOK	CH 11	16425	16425	16425
358	COLD CAL SAMPLE 11	CH 11	16425	16425	16425
360			16827	16827	16827
362			16828	16828	16828
364			16829	16829	16829
366			16830	16830	16830
368			16831	16831	16831
370			16832	16832	16832
372			16833	16833	16833
374			16834	16834	16834
376			16835	16835	16835
378			16836	16836	16836
380			16837	16837	16837
382	REFLECTOR 1 POSITION	CH 12	16838	16838	16838
384	REFLECTOR 2 POSITION	CH 12	16839	16839	16839
386	REFL 1 POS 12 2ND LOOK	CH 12	16840	16840	16840
388	REFL 2 POS 12 2ND LOOK	CH 12	16841	16841	16841
390	COLD CAL SAMPLE 12	CH 12	16842	16842	16842
392			16843	16843	16843

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DIGITAL A DATA  
COLD CAL MODE

5

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394		972			16718
396		974			17054
398		976			16828
400		978			16414
402		982			16423
404		984			17549
406		986			16949
408		988			19036
410		990			18931
412		992			18366
414		994			10388
416		996			16829
418	REFLECTOR 1 POSITION	1	CH	CH	16414
420	REFLECTOR 2 POSITION	1	CH	CH	16414
422	REFL 1 POS 13 2ND LOOK	1	CH	CH	17549
424	REFL 2 POS 13 2ND LOOK	1	CH	CH	16949
426	COLD CAL SAMPLE 13	CH	CH	CH	19036
428		3	CH	CH	18931
430		4	CH	CH	10407
432		5	CH	CH	16828
434		6	CH	CH	0000000000000000
436		7	CH	CH	0000000000000000
438		8	CH	CH	0000000000000000
440		9	CH	CH	0000000000000000
442		10	CH	CH	0000000000000000
444		11	CH	CH	0000000000000000
446		12	CH	CH	0000000000000000
448		13	CH	CH	0000000000000000
450	REFLECTOR 1 POSITION	1	CH	CH	16414
452	REFLECTOR 2 POSITION	1	CH	CH	16414
454	REFL 1 POS 14 2ND LOOK	1	CH	CH	17549
456	REFL 2 POS 14 2ND LOOK	1	CH	CH	16949
458	COLD CAL SAMPLE 14	CH	CH	19036	
460		3	CH	CH	18931
462		4	CH	CH	10407
464		5	CH	CH	16828
466		6	CH	CH	0000000000000000
468		7	CH	CH	0000000000000000
470		8	CH	CH	0000000000000000
472		9	CH	CH	0000000000000000
474		10	CH	CH	0000000000000000
476		11	CH	CH	0000000000000000
478		12	CH	CH	0000000000000000
480		13	CH	CH	0000000000000000
482		14	CH	CH	0000000000000000
484	REFLECTOR 1 POSITION	1	CH	CH	16414
486	REFLECTOR 2 POSITION	1	CH	CH	16414
488	REFL 1 POS 15 2ND LOOK	1	CH	CH	17549
490	REFL 2 POS 15 2ND LOOK	1	CH	CH	16949
492	COLD CAL DATA 2		CH	CH	19036

ELEMENT		DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
4.94	COLD CAL SAMPLE	15	CH	3	4	16269
4.96			CH	16716	1072	1074
4.98			CH	17057	1076	1078
500			CH	16827	1082	1084
502			CH	16426	1086	1088
504			CH	16949	1088	REFLECTOR 1 WARM
506			CH	17547	1088	REFLECTOR 2 WARM
508			CH	19047	1088	REFL 1 WARM
510			CH	18933	1088	REFL 2 WARM
512			CH	18359	1088	WARM CAL DATA 1
514			CH	20417	1088	
516			CH	16828	1088	
518			CH	16013	1088	
520			CH	6012	1088	
522			CH	6013	1088	
524			CH	6012	1088	
526			CH	6263	1088	
528			CH	6218	1088	
530			CH	6200	1088	
532			CH	1194	1088	
534			CH	1196	1088	
536			CH	1198	1088	
538			CH	1190	1088	
540			CH	1200	1088	
542			CH	1202	1088	
544			CH	1204	1088	
546			CH	1206	1088	
548			CH	1208	1088	
550			CH	1210	1088	
552			CH	1212	1088	
554			CH	1214	1088	
556			CH	1216	1088	
558			CH	1218	1088	
560			CH	1220	1088	
562			CH	1222	1088	
564			CH	1224	1088	
566			CH	1226	1088	
568			CH	1228	1088	
570			CH	1230	1088	
572			CH	1232	1088	
574			CH	1234	1088	
576			CH	1236	1088	
578			CH	1238	1088	
580			CH	1240	1088	
582			CH	1242	1088	
584			CH	1244	1088	
586			CH	1246	1088	
588			CH	1248	1088	
590			CH	1250	1088	
592			CH	1252	1088	
594			CH	1254	1088	
596			CH	1256	1088	
598			CH	1258	1088	
600			CH	1260	1088	
602			CH	1262	1088	
604			CH	1264	1088	
606			CH	1266	1088	
608			CH	1268	1088	
610			CH	1270	1088	
612			CH	1272	1088	
614			CH	1274	1088	
616			CH	1276	1088	
618			CH	1278	1088	
620			CH	1280	1088	
622			CH	1282	1088	
624			CH	1284	1088	
626			CH	1286	1088	
628			CH	1288	1088	
630			CH	1290	1088	
632			CH	1292	1088	
634			CH	1294	1088	
636			CH	1296	1088	
638			CH	1298	1088	
640			CH	1300	1088	
642			CH	1302	1088	
644			CH	1304	1088	
646			CH	1306	1088	
648			CH	1308	1088	
650			CH	1310	1088	
652			CH	1312	1088	
654			CH	1314	1088	
656			CH	1316	1088	
658			CH	1318	1088	
660			CH	1320	1088	
662			CH	1322	1088	
664			CH	1324	1088	
666			CH	1326	1088	
668			CH	1328	1088	
670			CH	1330	1088	
672			CH	1332	1088	
674			CH	1334	1088	
676			CH	1336	1088	
678			CH	1338	1088	
680			CH	1340	1088	
682			CH	1342	1088	
684			CH	1344	1088	
686			CH	1346	1088	
688			CH	1348	1088	
690			CH	1350	1088	
692			CH	1352	1088	
694			CH	1354	1088	
696			CH	1356	1088	
698			CH	1358	1088	
700			CH	1360	1088	
702			CH	1362	1088	
704			CH	1364	1088	
706			CH	1366	1088	
708			CH	1368	1088	
710			CH	1370	1088	
712			CH	1372	1088	
714			CH	1374	1088	
716			CH	1376	1088	
718			CH	1378	1088	
720			CH	1380	1088	
722			CH	1382	1088	
724			CH	1384	1088	
726			CH	1386	1088	
728			CH	1388	1088	
730			CH	1390	1088	
732			CH	1392	1088	
734			CH	1394	1088	
736			CH	1396	1088	
738			CH	1398	1088	
740			CH	1400	1088	
742			CH	1402	1088	
744			CH	1404	1088	
746			CH	1406	1088	
748			CH	1408	1088	
750			CH	1410	1088	
752			CH	1412	1088	
754			CH	1414	1088	
756			CH	1416	1088	
758			CH	1418	1088	
760			CH	1420	1088	
762			CH	1422	1088	
764			CH	1424	1088	
766			CH	1426	1088	
768			CH	1428	1088	
770			CH	1430	1088	
772			CH	1432	1088	
774			CH	1434	1088	
776			CH	1436	1088	
778			CH	1438	1088	
780			CH	1440	1088	
782			CH	1442	1088	
784			CH	1444	1088	
786			CH	1446	1088	
788			CH	1448	1088	
790			CH	1450	1088	
792			CH	1452	1088	
794			CH	1454	1088	
796			CH	1456	1088	
798			CH	1458	1088	
800			CH	1460	1088	
802			CH	1462	1088	
804			CH	1464	1088	
806			CH	1466	1088	
808			CH	1468	1088	
810			CH	1470	1088	
812			CH	1472	1088	
814			CH	1474	1088	
816			CH	1476	1088	
818			CH	1478	1088	
820			CH	1480	1088	
822			CH	1482	1088	
824			CH	1484	1088	
826			CH	1486	1088	
828			CH	1488	1088	
830			CH	1490	1088	
832			CH	1492	1088	
834			CH	1494	1088	
836			CH	1496	1088	
838			CH	1498	1088	
840			CH	1500	1088	
842			CH	1502	1088	
844			CH	1504	1088	
846			CH	1506	1088	
848			CH	1508	1088	
850			CH	1510	1088	
852			CH	1512	1088	
854			CH	1514	1088	
856			CH	1516	1088	
858			CH	1518	1088	
860			CH	1520	1088	
862			CH	1522	1088	
864			CH	1524	1088	
866			CH	1526	1088	
868			CH	1528	1088	
870			CH	1530	1088	
872			CH	1532	1088	
874			CH	1534	1088	
876			CH	1536	1088	
878			CH	1538	1088	
880			CH	1540	1088	
882			CH	1542	1088	
884			CH	1544	1088	
886			CH	1546	1088	
888			CH	1548	1088	
890			CH	1550	1088	
892			CH	1552	1088	
894			CH	1554	1088	
896			CH	1556	1088	
898			CH	1558	1088	
900			CH	1560	1088	
902			CH	1562	1088	
904			CH	1564	1088	
906			CH	1566	1088	
908			CH	1568	1088	
910			CH	1570	1088	
912			CH	1572	1088	
914			CH	1574	1088	
916			CH	1576	1088	
918			CH	1578	1088	
920			CH	1580	1088	
922			CH	1582	1088	
924			CH	1584	1088	
926			CH	1586	1088	
928			CH	1588	1088	
930			CH	1590	1088	
932			CH	1592	1088	
934			CH	1594	1088	
936			CH	1596	1088	
938			CH	1598	1088	
940			CH	1600	1088	
942			CH	1602	1088	
944			CH	1604	1088	
946			CH	1606	1088	
948			CH	1608	1088	
950			CH	1610	1088	
952			CH	1612	1088	
954			CH	1614	1088	
956			CH	1616	1088	
958			CH	1618	1088	
960			CH	1620	1088	
962			CH	1622	1088	
964			CH	1624	1088	
966			CH	1626	1088	
968			CH	1628	1088	
970			CH	1630	1088	
972			CH	1632	1088	
974			CH	1634	1088	
976			CH	1636	1088	
978			CH	1638	1088	
980			CH	1640	1088	
982			CH	1642	1088	
984			CH	1644	1088	
986			CH	1646	1088	
988			CH	1648	1088	
990			CH	1650	1088	
992			CH	1652</td		

AMSU A1\_17 A1.EXE;62

DIGITAL A DATA  
COLD CAL MODE

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16400	20.34	
1092	SCAN MOTOR A1-2	16717	20.53	
1094	FEEDHORN A1-1	17322	20.34	
1096	FEEDHORN A1-2	17703	20.85	
1098	RF MUX A1-1	17814	22.3.45	
1100	LOCAL OSCILLATOR CHANNEL 3	18009	22.3.15	
1102	LOCAL OSCILLATOR CHANNEL 4	19020	22.5.37	
1104	LOCAL OSCILLATOR CHANNEL 5	19046	22.4.87	
1106	LOCAL OSCILLATOR CHANNEL 6	18015	22.3.28	
1108	LOCAL OSCILLATOR CHANNEL 7	18215	22.3.57	
1110	LOCAL OSCILLATOR CHANNEL 8	18698	22.4.89	
1112	LOCAL OSCILLATOR CHANNEL 15	18648	22.5.41	
1114	PLL LO #2 CHANNELS 9 THROUGH 14	17344	22.2.63	
1116	PLL LO #1 CHANNELS 9 THROUGH 14	20208	22.2.89	
1118	SPARE (NOT USED)	32767	25.2.86	
1120	MIXER/IF AMPLIFIER CHANNEL 3	18529	22.3.90	
1122	MIXER/IF AMPLIFIER CHANNEL 4	18217	22.4.05	
1124	MIXER/IF AMPLIFIER CHANNEL 5	18327	22.4.00	
1126	MIXER/IF AMPLIFIER CHANNEL 6	18029	22.3.15	
1128	MIXER/IF AMPLIFIER CHANNEL 7	18140	22.3.47	
1130	MIXER/IF AMPLIFIER CHANNEL 8	18120	22.4.08	
1132	MIXER/IF AMPLIFIER CHANNEL 9 THRU 14	17431	22.2.77	
1134	MIXER/IF AMPLIFIER CHANNEL 15 THRU 14	18655	22.4.75	
1136	IF AMPLIFIER CHANNEL 9	18653	22.4.77	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	19080	22.4.78	
1140	IF AMPLIFIER CHANNEL 9	18692	22.4.98	
1142	IF AMPLIFIER CHANNEL 10	17844	22.2.81	
1144	IF AMPLIFIER CHANNEL 11	20258	22.2.30	
1146	DC/DC CONVERTER	18026	22.2.78	
1148	IF AMPLIFIER CHANNEL 13	17643	22.2.89	
1150	IF AMPLIFIER CHANNEL 14	17617	22.2.72	
1152	IF AMPLIFIER CHANNEL 12	18381	22.2.88	
1154	RF SHELF A1-1	18222	22.3.75	
1156	DETCTOR/PREAMPLIFIER ASSEMBLY	17371	21.66	
1158	A1-1 WARM LOAD 1	17304	20.08	
1160	RF SHELF A1-2	1505	20.11	
1162	A1-1 WARM LOAD 2	21505	20.13	
1164	A1-1 WARM LOAD 3	21550	20.14	
1166	A1-1 WARM LOAD 4	21260	20.18	
1168	A1-1 WARM LOAD CENTER	21445	20.39	
1170	A1-2 WARM LOAD 1	21740	20.35	
1172	A1-2 WARM LOAD 2	21560	20.41	
1174	A1-2 WARM LOAD 3	21596	20.41	
1176	A1-2 WARM LOAD 4	21525	20.28	
1178	A1-2 WARM LOAD CENTER	21392	20.28	
1180	TEMP SENSOR REFERENCE VOLTAGE	24882		

DESCRIPTION	STATUS	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON	ON	ON	ON
SCANNER A1-2 POWER	ON	ON	PLL#1	PLL#1
PLL POWER	PLL#1	NO	NO	NO
ANTENNA IN WARM CAL POSITION MODE	YES	YES	YES	YES
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	NO	NO	NO	NO
ANTENNA IN FULL SCAN MODE	OFF	OFF	OFF	OFF
SURVIVAL HEATER POWER	CONNECT	CONNECT	CONNECT	CONNECT
MODULE POWER	ZERO	ZERO	ZERO	ZERO
COLD CAL POSITION MSB				
COLD CAL POSITION LSB				
ANALOG DATA	VALUE	VALUE	VALUE	VALUE
A1-1 SCANNER MOTOR TEMPERATURE	213	23.5	213	23.5
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	214	21.5	214	21.5
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9
ANALOG DATA	DEG C	DEG C	DEG C	DEG C
A1-1 ANTENNA DRIVE MOTOR CURRENT {AVRG}	4	1.86	4	1.86
A1-2 ANTENNA DRIVE MOTOR CURRENT {AVRG}	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	167	14.91
ANTENNA DRIVE +15 VDC	167	14.66	167	14.66
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	8.05	157	8.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.02	143	5.02
RECEIVER MIXER/IF +10 VDC	167	10.03	167	10.03
PHASE LOCK LOOP {CHANNEL 9/14}	+15	VDC	167	10.03
PHASE LOCK LOOP {CHANNEL 9/14}	-15	VDC	142	5.02
L.O. VOLTAGE {CHANNEL 8}	VDC	142	5.02	143
L.O. VOLTAGE {CHANNEL 7}	VDC	172	10.00	172
L.O. VOLTAGE {CHANNEL 6}	VDC	171	10.01	171
L.O. VOLTAGE {CHANNEL 3}	VDC	173	10.00	173
L.O. VOLTAGE {CHANNEL 4}	VDC	174	10.06	174
L.O. VOLTAGE {CHANNEL 5}	VDC	172	9.94	172
PLL#2 LOCK DETECT	VDC	171	10.11	171
PLL#1 LOCK DETECT	VDC	174	10.08	174
L.O. VOLTAGE (CHANNEL 15)	VDC	217	4.34	217
		167	14.91	167

## PRT TEMPERATURES

## VARIABLE TARGET

## FIXED TARGET

## BASEPLATE

	A1-1	DEG K	A1-2	DEG K
NO.			NO.	
615	42.00	601	14.00	
616	43.00	602	15.00	
617	44.00	603	16.00	
618	45.00	604	17.00	
619	46.00	605	18.00	
620	47.00	606	19.00	
621	48.00	607	20.00	
622	49.00	608	21.00	
623	50.00	609	22.00	
624	51.00	610	23.00	
625	52.00	611	24.00	
626	53.00	612	25.00	
627	67.00	613	69.00	
628	68.00	614	70.00	
629	71.00	630	72.00	
631	26.00	632	27.00	

## THERMOCOUPLE TEMPERATURES

## FIXED TARGET SHROUD

## VARIABLE TARGET SHROUD

## FIXED TARGET N2

## VARIABLE TARGET N2

## HEATER N2

## ADJUNCT RADIATORS

	A1-1	DEG K	A1-2	DEG K
NO.			NO.	
558	5.00	537	34.00	
559	6.00	538	35.00	
550	8.00	524	36.00	
551	9.00	525	37.00	
506	57.00	502	30.00	
507	58.00	503	31.00	
516	59.00	511	32.00	
517	60.00	512	33.00	
514	61.00	509	38.00	
515	62.00	510	39.00	
508	63.00	504	61.00	
518	64.00	513	62.00	
519	65.00	520	64.00	
521	66.00	522	10.00	
523	65.00	577	74.00	
575	73.00	581	76.00	



TEST DATA SHEET 28 (Sheet 1 of 2)

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
a.				P
b.				P
c.				P
d.				P

CC = Cold Cal

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 10

Test Systems Engineer

Date



3/16/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1 EXE:62 COLD CAL MODE P1 16-MAR-99 08:12:05 SCAN NUMBER 194

[ 5 ] DIGITAL A DATA ELEMENT 000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS		BP	LOOK 1	BP	LOOK 2		
				LOOK 1	LOOK 2						
1	6013	6013	9	6013	6013	17	6013	6013	25	6013	6013
2	6013	6013	10	6013	6013	18	6013	6013	26	6013	6013
3	6013	6013	11	6013	6013	19	6013	6013	27	6013	6013
4	6013	6013	12	6013	6013	20	6013	6013	28	6013	6013
5	6013	6013	13	6013	6013	21	6013	6013	29	6013	6013
6	6013	6013	14	6013	6013	22	6013	6013	30	6013	6013
7	6013	6013	15	6013	6013	23	6013	6013	CC	0	0
8	6013	6013	16	6013	6013	24	6013	6013	WC	0	0
[ 21 ] UP				[ 22 ] DOWN							

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TDS 28  
10/2

AMSU A1-17 A1:EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:17:23 SCAN NUMBER 234

BP	LOOK 1	LOOK 2	BP	REFLECTOR 1	POSITIONS	BP	LOOK 1	BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
1	5945	5945	9	5945	5945	17	5945	5945	25	5945	5945	5945	5945
2	5945	5945	10	5945	5945	18	5945	5945	26	5945	5945	5945	5945
3	5945	5945	11	5945	5945	19	5945	5945	27	5945	5945	5945	5945
4	5945	5945	12	5945	5945	20	5945	5945	28	5945	5945	5945	5945
5	5945	5945	13	5945	5945	21	5945	5945	29	5945	5945	5945	5945
6	5945	5945	14	5945	5945	22	5945	5945	30	5945	5945	5945	5945
7	5945	5945	15	5945	5945	23	5945	5945	CC	0	0	0	0
8	5945	5945	16	5945	5945	24	5945	5945	WC	0	0	0	0
[ 21 ]	UP			[ 22 ]	DOWN								

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1-EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:18:35 SCAN NUMBER 243

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITION 1	POSITION 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	5868	5868	9	5868	5868	17	5868	5868	25	5868	5868
2	5868	5868	10	5868	5868	18	5868	5868	26	5868	5868
3	5868	5868	11	5868	5868	19	5868	5868	27	5868	5868
4	5868	5868	12	5868	5868	20	5868	5868	28	5868	5868
5	5868	5868	13	5868	5868	21	5868	5868	29	5868	5868
6	5868	5868	14	5868	5868	22	5868	5868	30	5868	5868
7	5868	5868	15	5868	5868	23	5868	5868	CC	0	0
8	5868	5868	16	5868	5868	24	5868	5868	WC	0	0
[ 21 ]	UP			[ 22 ]	DOWN						

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2  
RETURN [ 1 ]

AMSU A1-17 A1.EXE:62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS	BP	LOOK 1	BP	LOOK 1	BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
1	5717	5717	9	5717	5717	17	5717	5717	25	5717	5717	25	5717	5717
2	5717	5717	10	5717	5717	18	5717	5717	26	5717	5717	26	5717	5717
3	5717	5717	11	5717	5717	19	5717	5717	27	5717	5717	27	5717	5717
4	5717	5717	12	5717	5717	20	5717	5717	28	5717	5717	28	5717	5717
5	5717	5717	13	5717	5717	21	5717	5717	29	5717	5717	29	5717	5717
6	5717	5717	14	5717	5717	22	5717	5717	30	5717	5717	30	5717	5717
7	5717	5717	15	5717	5717	23	5717	5717	CC	5717	5717	CC	5717	5717
8	5717	5717	16	5717	5717	24	5717	5717	0	5717	5717	0	5717	5717
[ 21 ] UP			[ 22 ] DOWN											

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 28 (Sheet 2 of 2)

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			P
	a.			P
	b.			P
	c.			P
	d.			P

CC = Cold Cal

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1 ±10 counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: R.H. 105  
R. Haig 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



3/16/99



AMSU A1-17 A1.EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS	BP	LOOK 1	BP	LOOK 2	BP	LOOK 1	BP	LOOK 2
1	5812	5812	9	5812	5812	17	5812	5812	25	5812	5812	5812
2	5812	5812	10	5812	5812	18	5812	5812	26	5812	5812	5812
3	5812	5812	11	5812	5812	19	5812	5812	27	5812	5812	5812
4	5812	5812	12	5812	5812	20	5812	5812	28	5812	5812	5812
5	5812	5812	13	5812	5812	21	5812	5812	29	5812	5812	5812
6	5812	5812	14	5812	5812	22	5812	5812	30	5812	5812	5812
7	5812	5812	15	5812	5812	23	5812	5812	CC	0	0	0
8	5812	5812	16	5812	5812	24	5812	5812	WC	0	0	0
[ 21 ] UP			[ 22 ] DOWN									

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TDS28  
2 OF 2

AMSU A1-17 A1:EXE:62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:17:31 SCAN NUMBER 235

BP	LOOK 1	LOOK 2	BP	REFLECTOR 1	REFLECTOR 2	POSITIONS 2	BP	LOOK 2	BP	LOOK 1	LOOK 2
1	5746	5746	9	5746	5746	17	5746	5746	25	5746	5746
2	5746	5746	10	5746	5746	18	5746	5746	26	5746	5746
3	5746	5746	11	5746	5746	19	5746	5746	27	5746	5746
4	5746	5746	12	5746	5746	20	5746	5746	28	5746	5746
5	5746	5746	13	5746	5746	21	5746	5746	29	5746	5746
6	5746	5746	14	5746	5746	22	5746	5746	30	5746	5746
7	5746	5746	15	5746	5746	23	5746	5746	CC	0	0
8	5746	5746	16	5746	5746	24	5746	5746	WC	0	0
[ 21 ] UP			[ 22 ] DOWN								

POWER [ 4 ] ON  
SELECT TOUCHSCREEN BUTTON 2 ONLY [ 2 ] PRINT [ 3 ] FULL  
SCREEN 2 ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN

AMSU	A1-17	A1	EXE <sub>62</sub>	COLD CAL	MODE	P1	16-MAR-99	08:18:43	SCAN NUMBER	244
[ 5 ]	DIGITAL A	DATA	ELEMENT	0000						
[ 6 ]	DIGITAL B	DATA	ELEMENT	00						
[ 7 ]	ANALOG	DATA	ELEMENT	00						

```
POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
SELECT TOUCHSCREEN BUTTON 2 [ 1 ] RETURN
```

AMSSU A1-17 A1 EXE:62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000

P1 16-MAR-99 08:19:55 SCAN NUMBER 253

[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

BP	LOOK 1	LOOK 2	BP	REFLECTOR POSITIONS		BP	LOOK 2	BP	LOOK 1	LOOK 2	
				LOOK 1	LOOK 2						
1	5519	5519	9	5519	5519	17	5519	5519	25	5519	5519
2	5519	5519	10	5519	5519	18	5519	5519	26	5519	5519
3	5519	5519	11	5519	5519	19	5519	5519	27	5519	5519
4	5519	5519	12	5519	5519	20	5519	5519	28	5519	5519
5	5519	5519	13	5519	5519	21	5519	5519	29	5519	5519
6	5519	5519	14	5519	5519	22	5519	5519	30	5519	5519
7	5519	5519	15	5519	5519	23	5519	5519	CC	0	0
8	5519	5519	16	5519	5519	24	5519	5519	0	0	0
[ 21 ] UP			[ 22 ] DOWN								

POWER [ 4 ] ON  
SELECT TOUCHSCREEN BUTTON 2 ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN

## TEST DATA SHEET 29

Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.3)  
 Condition: Cold Cal Position MSB=0 and Cold Cal Position LSB=0

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 SN: 105

R. Haig 3/16/89

Test Systems Engineer

Date

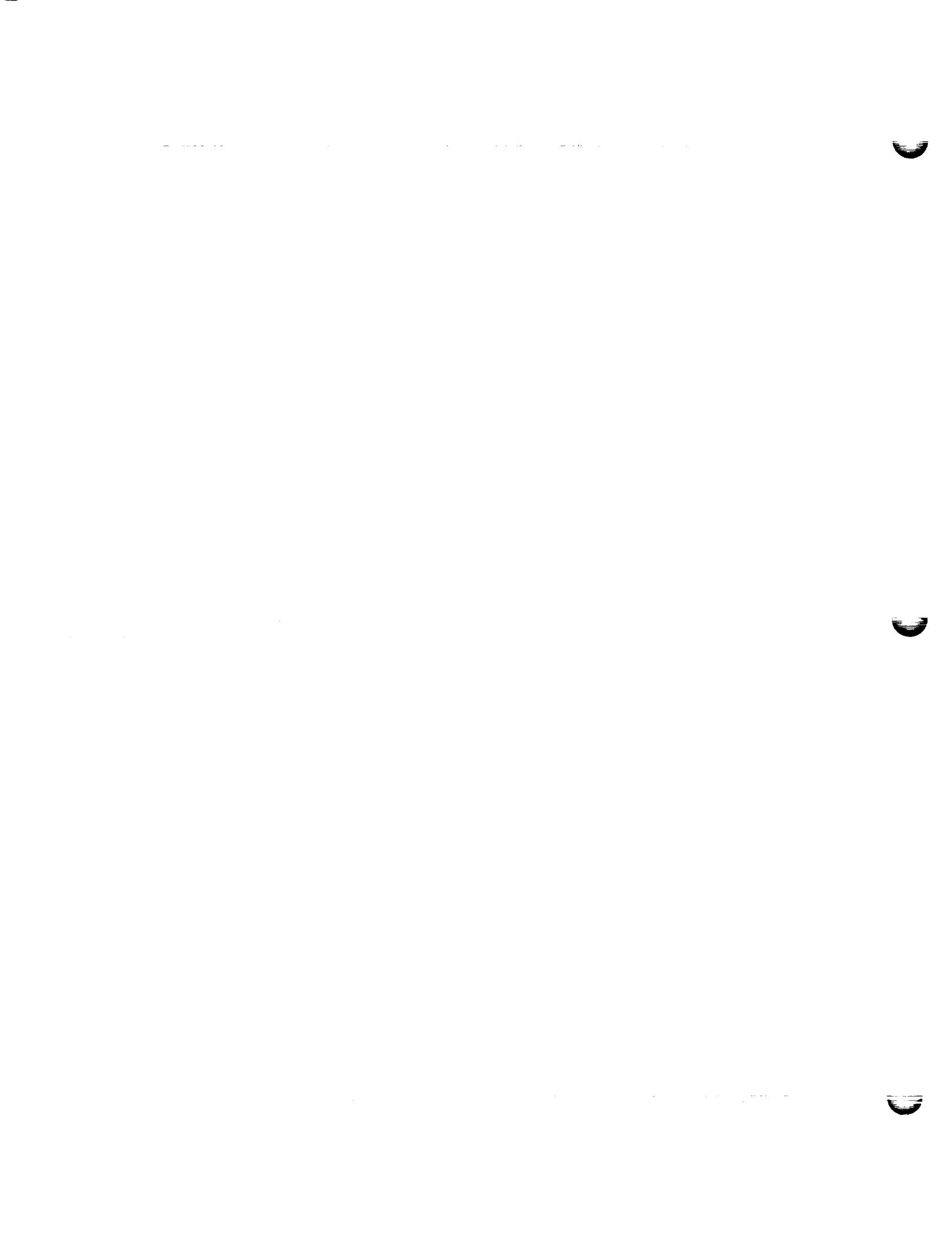
MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1.EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

	RADIOMETRIC DATA					
	CHANNEL	DATA	BP	CHANNEL	DATA	BP
1	16270	9	16261	17	16267	25
2	16264	10	16261	18	16265	26
3	16261	11	16260	19	16264	27
4	16261	12	16266	20	16258	28
5	16261	13	16261	21	16258	29
6	16265	14	16262	22	16255	30
7	16262	15	16262	23	16265	30
8	16264	16	16265	24	16257	WC
	[ 21 ] UP	ON SCREEN ONLY	[ 2 ] PRINT	[ 3 ] FULL	[ 1 ] RETURN	
	[ 22 ] DOWN					

SELECT TOUCHSCREEN BUTTON

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL  
[ 1 ] RETURN

TDs = 9

AMSU

[ 5 ] A1-17 A1 EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

	RADIOMETRIC DATA					
	CHANNEL 9					
	BP	DATA	BP	DATA	BP	DATA
1	17543	9	17545	17	17541	25
2	17545	10	17540	18	17541	26
3	17540	11	17541	19	17540	27
4	17540	12	17540	20	17538	28
5	17540	13	17541	21	17540	29
6	17537	14	17543	22	17540	30
7	17537	15	17541	23	17541	CC
8	17544	16	17543	24	17542	WC
	[ 21 ] UP	[ 22 ] DOWN				0

POWER [ 4 ] ON  
SELECT TOUCHSCREEN BUTTON 2 SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN

TEST DATA SHEET 30 (Sheet 1 of 2)  
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

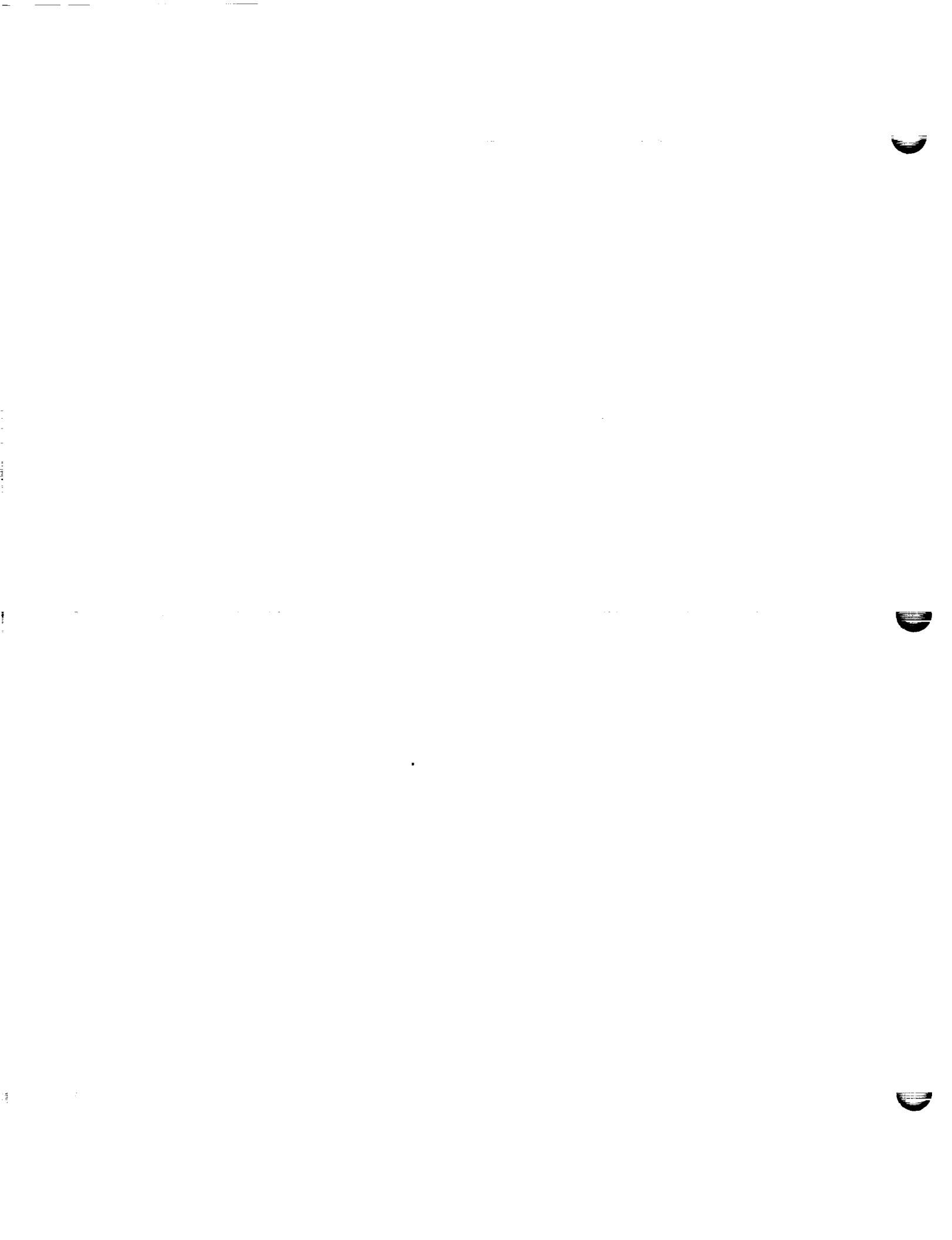
Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	✓
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	✓

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)



TEST DATA SHEET 30 (Sheet 2 of 2)  
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	▼

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* = Count of 24,552 +1765,-1308.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 377234 S/N: 105R. Hay ( 3/16/99 )

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

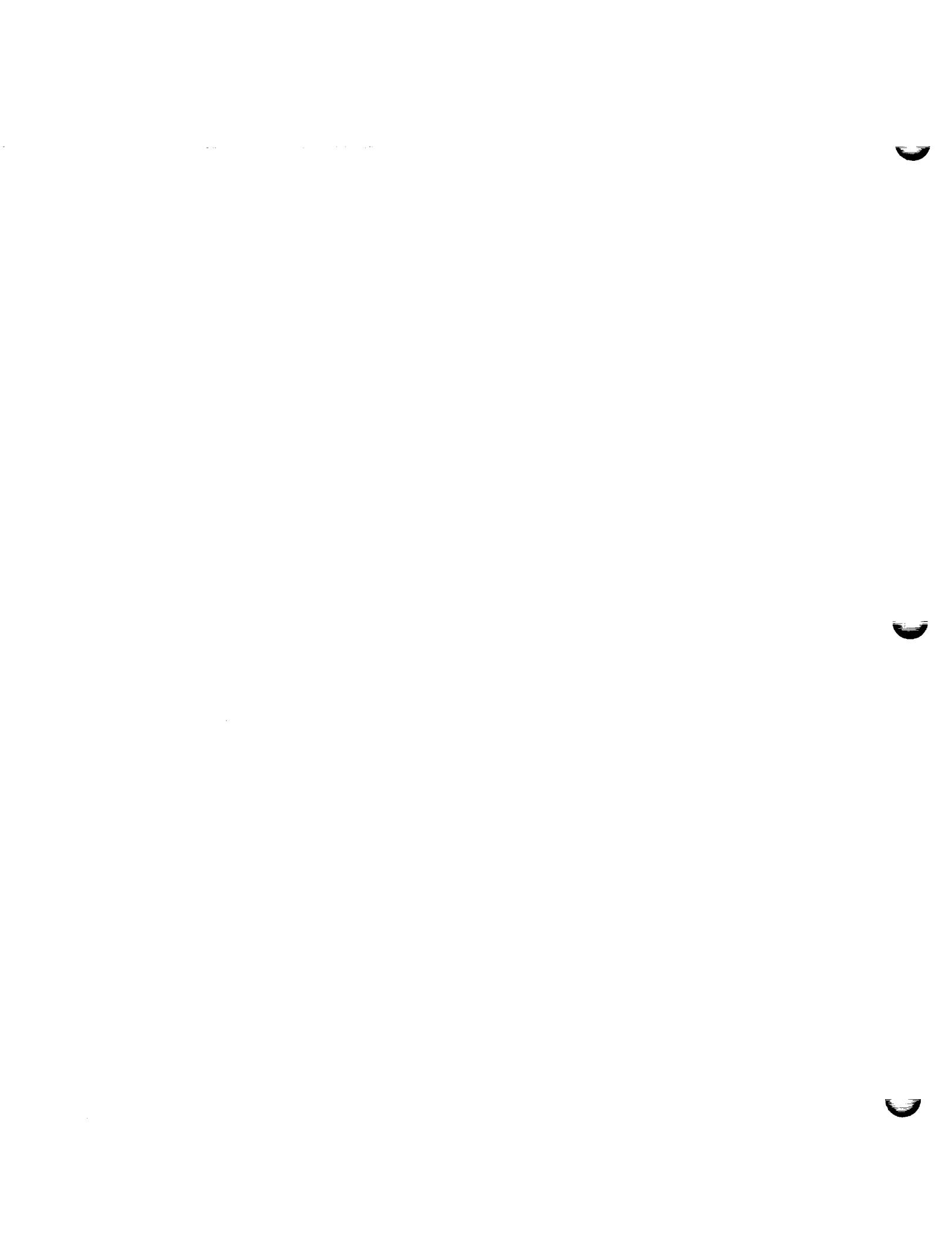
Date

△G

3/16/99

Quality Control

Date



AMSU A1-17 A1-EXE;62 COLD CAL MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:12:37 SCAN NUMBER 198

NO		DIGITAL A	TEMPERATURES	1 TO 16	DATA	TEMP C
		DATA	TEMP C	NO		
1	SCAN MOTOR	A1-1	16410	20.36	9 LO CHANNEL	5 25.18
2	SCAN MOTOR	A1-2	16734	20.56	10 LO CHANNEL	6 23.43
3	FEEDHORN	A1-1	17399	21.48	11 LO CHANNEL	7 18333
4	FEEDHORN	A1-2	17927	21.07	12 LO CHANNEL	8 18853
5	RF MUX	A1-1	17825	22.83	13 LO CHANNEL	15 25.19
6	RF MUX	A1-2	18170	23.76	14 PLLO #2 CH	9/14 25.71
7	LO CHANNEL	3	19185	25.47	15 PLLO #1 CH	9/14 17466
8	LO CHANNEL	4	19339	25.69	16 PLLO REFERENCE	20396 22.86
[ 21 ]	UP	[ 22 ] DOWN				32767 52.86

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL,  
SELECT TOUCHSCREEN BUTTON 2 [ 1 ] RETURN

TDS 30

MSU A1-17 A1,EXE,62 COLD CAL MODE  
5 ] DIGITAL A DATA ELEMENT 0000  
6 ] DIGITAL B DATA ELEMENT 00  
7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:12:46 SCAN NUMBER 199

IO		DIGITAL A TEMP C	TEMPERATURES 17 TO 32 NO		DATA	TEMP C
.7	MIXER IF CH 3	18703	24.23	25 IF AMP CH 11/14	18820	25.08
.8	MIXER IF CH 4	18393	24.39	26 IF AMP CH 9	19246	25.10
.9	MIXER IF CH 5	18498	24.33	27 IF AMP CH 10	18861	25.30
.0	MIXER IF CH 6	18150	23.38	28 IF AMP CH 11	17967	23.05
.1	MIXER IF CH 7	18280	23.74	29 DC/DC CONVERTER	20435	27.65
.2	MIXER IF CH 8	18296	24.42	30 IF AMP CH 13	18148	23.12
.3	MIXER IF CH 9/14	17559	23.01	31 IF AMP CH 14	17766	23.01
.4	MIXER IF CH 15/14	18812	25.25	32 IF AMP CH 12	17739	22.95
.21	UP	[ 22 ] DOWN				

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

[SU A1-17 A1-EXE;62 COLD CAL MODE

5 ] DIGITAL A DATA ELEMENT 0000

6 ] DIGITAL B DATA ELEMENT 00

7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:12:56 SCAN NUMBER 201

	DIGITAL A DATA	TEMP C NO	TEMPERATURES 31 TO 46		DIGITAL A DATA	TEMP C NO	TEMPERATURES 31 TO 46		DIGITAL A DATA	TEMP C NO	TEMP C
1	IF AMP CH 14	17777	23.03	39	A1-1	WARM	LOAD	4	21274	C	20.17
2	IF AMP CH 12	17750	22.97	40	A1-1	WARM	LOAD	C	21458	C	20.21
3	RF SHELF A1-1	18541	24.19	41	A1-2	WARM	LOAD	1	21765	C	20.44
4	RF SHELF A1-2	18405	24.10	42	A1-2	WARM	LOAD	2	21593	C	20.41
5	DETECTOR/PREAMP	17476	21.86	43	A1-2	WARM	LOAD	3	21628	C	20.48
6	DET/LOAD 1	21317	20.10	44	A1-2	WARM	LOAD	4	21559	C	20.47
7	A1-1 WARM LOAD 1	21516	20.13	45	A1-2	WARM	LOAD	C	21423	C	20.34
8	A1-1 WARM LOAD 2	21566	20.16						24882		
9	A1-1 WARM LOAD 3			[ 22 ] DOWN							
10	A1-1 WARM LOAD 21			UP							

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN

SELECT TOUCHSCREEN BUTTON 2



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 31  
Digital-A Data Output Nadir Mode Synch Sequence,  
Unit I.D./Serial Number and Digital-B Serial Data Verification  
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.4)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	16	16	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	▼

\* AMSU A1 Identification Words  
(data entered in decimal system)

	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

Test Systems Engineer

Date

R. Hair  
3/16/99

MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

3/16/99



AMSU A1-17 A1, EXE; 62 NADIR MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

[ 9 ] MODULE POWER = CONNECT COMMANDS  
[ 10 ] SURVIVAL HEATER POWER = OFF ANTENNA IN COLD CAL POSIT = NO [ 15 ]  
[ 11 ] MODULE TOTALLY OFF = ON ANTENNA IN NADIR POSITION = YES [ 16 ]  
[ 12 ] SCANNER A1 - 1 POWER = ON ANTENNA IN FULL SCAN MODE = NO [ 17 ]  
[ 13 ] SCANNER A1 - 2 POWER = ON PLL POWER = PLL # 1 [ 18 ]  
[ 14 ] ANTENNA IN WARM CAL POSIT = NO COLD CAL POSITION MSB = ZERO [ 19 ]  
POWER [ 4 ] ON COLD CAL POSITION LSB = ZERO [ 20 ]  
SELECT TOUCHSCREEN BUTTON 3 PRINT [ 2 ] SCREEN ONLY [ 3 ] FULL [ 1 ] RETURN

7DS 3/

1

2

3

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE	BYTE 1	572	NADIR SAMPLE	17 CH 8
2	SYNC SEQUENCE	BYTE 2	574	NADIR SAMPLE	CH 9
3	SYNC SEQUENCE	BYTE 3	576	NADIR SAMPLE	CH 10
4	UNIT ID AND SERIAL NO	000010001	578	REFLECTOR 1 POSITION	CH 11
5	DIGITAL B DATA	BYTE 1	580	REFLECTOR 1 POSITION	CH 12
6	DIGITAL B DATA	BYTE 2	582	REFLECTOR 2 POSITION	CH 13
7	DIGITAL B DATA	BYTE 3	584	REFL 1 POS 18 2ND LOOK	CH 14
8	DIGITAL B DATA	BYTE 4	586	REFL 2 POS 18 2ND LOOK	CH 15
9	REFLECTOR 1 POSITION	1	588	NADIR SAMPLE	CH 16
10	REFLECTOR 2 POSITION	1	590	REFL 1 POS 18 2ND LOOK	CH 17
11	REFL 1 POS 1 2ND LOOK	1	592	REFL 2 POS 18 2ND LOOK	CH 18
12	REFL 2 POS 1 2ND LOOK	1	594	NADIR SAMPLE	CH 19
13	NADIR SAMPLE	1	596	REFLECTOR 1 POSITION	CH 20
14	REFL 1 POS 1 2ND LOOK	1	598	REFLECTOR 2 POSITION	CH 21
15	REFL 2 POS 1 2ND LOOK	1	600	REFL 1 POS 19 2ND LOOK	CH 22
16	NADIR SAMPLE	1	602	REFL 2 POS 19 2ND LOOK	CH 23
17	REFL 1 POS 1 2ND LOOK	1	604	NADIR SAMPLE	CH 24
18	NADIR SAMPLE	1	606	REFLECTOR 1 POSITION	CH 25
19	REFL 2 POS 1 2ND LOOK	1	608	REFLECTOR 2 POSITION	CH 26
20	NADIR SAMPLE	1	610	REFL 1 POS 19 2ND LOOK	CH 27
21	REFL 2 POS 1 2ND LOOK	1	612	REFL 2 POS 19 2ND LOOK	CH 28
22	NADIR SAMPLE	1	614	NADIR SAMPLE	CH 29
23	REFL 1 POS 1 2ND LOOK	1	616	REFLECTOR 1 POSITION	CH 30
24	NADIR SAMPLE	1	618	REFLECTOR 2 POSITION	CH 31
25	REFL 2 POS 1 2ND LOOK	1	620	REFL 1 POS 19 2ND LOOK	CH 32
26	NADIR SAMPLE	1	622	REFL 2 POS 19 2ND LOOK	CH 33
27	REFL 1 POS 1 2ND LOOK	1	624	NADIR SAMPLE	CH 34
28	NADIR SAMPLE	1	626	REFLECTOR 1 POSITION	CH 35
29	REFL 2 POS 1 2ND LOOK	1	628	REFLECTOR 2 POSITION	CH 36
30	NADIR SAMPLE	1	630	REFL 1 POS 19 2ND LOOK	CH 37
31	REFL 2 POS 1 2ND LOOK	1	632	REFL 2 POS 19 2ND LOOK	CH 38
32	NADIR SAMPLE	1	634	NADIR SAMPLE	CH 39
33	REFL 1 POS 1 2ND LOOK	1	636	REFLECTOR 1 POSITION	CH 40
34	NADIR SAMPLE	1	638	REFLECTOR 2 POSITION	CH 41
35	REFL 2 POS 1 2ND LOOK	1	640	REFL 1 POS 19 2ND LOOK	CH 42
36	NADIR SAMPLE	1	642	REFL 2 POS 19 2ND LOOK	CH 43
37	REFL 1 POS 1 2ND LOOK	1	644	NADIR SAMPLE	CH 44
38	NADIR SAMPLE	1	646	REFLECTOR 1 POSITION	CH 45
39	REFL 2 POS 1 2ND LOOK	1	648	REFLECTOR 2 POSITION	CH 46
40	NADIR SAMPLE	1	650	REFL 1 POS 20 2ND LOOK	CH 47
41	REFL 1 POS 1 2ND LOOK	1	652	REFL 2 POS 20 2ND LOOK	CH 48
42	NADIR SAMPLE	1	654	NADIR SAMPLE	CH 49
43	REFL 2 POS 1 2ND LOOK	1	656	REFLECTOR 1 POSITION	CH 50
44	NADIR SAMPLE	1	658	REFLECTOR 2 POSITION	CH 51
45	REFL 1 POS 1 2ND LOOK	1	660	REFL 1 POS 20 2ND LOOK	CH 52
46	NADIR SAMPLE	1	662	REFL 2 POS 20 2ND LOOK	CH 53
47	REFL 2 POS 1 2ND LOOK	1	664	NADIR SAMPLE	CH 54
48	NADIR SAMPLE	1	666	REFLECTOR 1 POSITION	CH 55
49	REFL 1 POS 1 2ND LOOK	1	668	REFLECTOR 2 POSITION	CH 56
50	NADIR SAMPLE	1	670	REFL 1 POS 20 2ND LOOK	CH 57
51	REFL 2 POS 1 2ND LOOK	1	672	REFL 2 POS 20 2ND LOOK	CH 58
52	NADIR SAMPLE	1	674	NADIR SAMPLE	CH 59
53	REFL 1 POS 1 2ND LOOK	1	676	REFLECTOR 1 POSITION	CH 60
54	NADIR SAMPLE	1	678	REFLECTOR 2 POSITION	CH 61
55	REFL 2 POS 1 2ND LOOK	1	680	REFL 1 POS 20 2ND LOOK	CH 62
56	NADIR SAMPLE	1	682	REFL 2 POS 20 2ND LOOK	CH 63
57	REFL 1 POS 1 2ND LOOK	1	684	NADIR SAMPLE	CH 64
58	NADIR SAMPLE	1	686	REFLECTOR 1 POSITION	CH 65
59	REFL 2 POS 1 2ND LOOK	1	688	REFLECTOR 2 POSITION	CH 66
60	NADIR SAMPLE	1	690	REFL 1 POS 20 2ND LOOK	CH 67
61	REFL 1 POS 1 2ND LOOK	1	692	REFL 2 POS 20 2ND LOOK	CH 68
62	NADIR SAMPLE	1	694	NADIR SAMPLE	CH 69
63	REFL 2 POS 1 2ND LOOK	1	696	REFLECTOR 1 POSITION	CH 70
64	NADIR SAMPLE	1	698	REFLECTOR 2 POSITION	CH 71
65	REFL 1 POS 1 2ND LOOK	1	700	REFL 1 POS 20 2ND LOOK	CH 72
66	NADIR SAMPLE	1	702	REFL 2 POS 20 2ND LOOK	CH 73
67	REFL 2 POS 1 2ND LOOK	1	704	NADIR SAMPLE	CH 74
68	NADIR SAMPLE	1	706	REFLECTOR 1 POSITION	CH 75
69	REFL 1 POS 1 2ND LOOK	1	708	REFLECTOR 2 POSITION	CH 76
70	NADIR SAMPLE	1	710	REFL 1 POS 20 2ND LOOK	CH 77
71	REFL 2 POS 1 2ND LOOK	1	712	REFL 2 POS 20 2ND LOOK	CH 78
72	NADIR SAMPLE	1	714	NADIR SAMPLE	CH 79
73	REFL 1 POS 1 2ND LOOK	1	716	REFLECTOR 1 POSITION	CH 80
74	NADIR SAMPLE	1	718	REFLECTOR 2 POSITION	CH 81
75	REFL 2 POS 1 2ND LOOK	1	720	REFL 1 POS 20 2ND LOOK	CH 82
76	NADIR SAMPLE	1	722	REFL 2 POS 20 2ND LOOK	CH 83
77	REFL 1 POS 1 2ND LOOK	1	724	NADIR SAMPLE	CH 84
78	NADIR SAMPLE	1	726	REFLECTOR 1 POSITION	CH 85
79	REFL 2 POS 1 2ND LOOK	1	728	REFLECTOR 2 POSITION	CH 86
80	NADIR SAMPLE	1	730	REFL 1 POS 20 2ND LOOK	CH 87
81	REFL 1 POS 1 2ND LOOK	1	732	REFL 2 POS 20 2ND LOOK	CH 88
82	NADIR SAMPLE	1	734	NADIR SAMPLE	CH 89
83	REFL 2 POS 1 2ND LOOK	1	736	REFLECTOR 1 POSITION	CH 90
84	NADIR SAMPLE	1	738	REFLECTOR 2 POSITION	CH 91
85	REFL 1 POS 1 2ND LOOK	1	740	REFL 1 POS 20 2ND LOOK	CH 92
86	NADIR SAMPLE	1	742	REFL 2 POS 20 2ND LOOK	CH 93

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94		672			16392
96		674			16381
98		676			17505
100		678			16872
102		16877			18758
104		16871			18199
106		168217			20215
108		168218			16749
110		16792			21950
112	REFLECTOR 1 POSITION	CH 7			21950
114	REFLECTOR 2 POSITION	CH 8			21950
116	REFL 1 POS 4 2ND LOOK	CH 9			2149
118	REFL 2 POS 4 2ND LOOK	CH 10			2149
120	NADIR SAMPLE 4	CH 11			2149
122		16224			2149
124		16667			16217
126		17002			16665
128		16810			116999
130		16391			116392
132		16384			116384
134		17490			117502
136		16876			116875
138		18876			118198
140		18207			118775
142		18207			118775
144		18887			118887
146	REFLECTOR 1 POSITION	CH 14			118887
148	REFLECTOR 2 POSITION	CH 15			118887
150	REFL 1 POS 5 2ND LOOK	CH 15			118887
152	REFL 2 POS 5 2ND LOOK	CH 15			118887
154	NADIR SAMPLE 5	CH 15			118887
156		16217			116217
158		16663			116667
160		16603			116667
162		16806			116667
164		16391			116667
166		16382			116667
168		17504			116667
170		16875			116667
172		18882			116667
174		18198			116667
176		18773			116667
178		18231			116667
180	REFLECTOR 1 POSITION	CH 15			116667
182	REFLECTOR 2 POSITION	CH 15			116667
184	REFL 1 POS 6 2ND LOOK	CH 15			116667
186	REFL 2 POS 6 2ND LOOK	CH 15			116667
188	NADIR SAMPLE 6	CH 15			116667
190		17002			116667

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ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194			16810	772	16807
196			16388	774	16395
200			17505	776	16376
204			16872	780	17502
206			18876	782	16875
210			18770	784	18877
214	REFLECTOR 1 POSITION	7	18193	786	18866
216	REFLECTOR 2 POSITION	7	20207	788	188217
218	REFL 1 POS 7 2ND LOOK	7	16792	790	20203
220	REFL 2 POS 7 2ND LOOK	7	21449	792	16793
222	NADIR SAMPLE	3	1950	794	21449
224			1950	796	1950
226			1950	798	21449
228			1950	800	21450
230			16663	804	16664
232			17008	806	17009
234			16391	808	16381
236			16381	810	16381
238			17503	812	17500
240			16873	814	16873
242			18750	816	18879
244			18875	818	18879
246			18875	820	18879
248	REFLECTOR 1 POSITION	8	20204	822	16796
250	REFLECTOR 2 POSITION	8	21449	824	21449
252	REFL 1 POS 8 2ND LOOK	8	1950	826	21449
254	REFL 2 POS 8 2ND LOOK	8	1950	828	21449
256	NADIR SAMPLE	3	16221	830	1950
258			21449	832	1950
260			1950	834	1950
262			16663	836	16667
264			17001	838	16699
266			16806	840	16808
268			16390	842	16391
270			17499	844	17499
272			16876	846	16872
274			18876	848	18874
276			18876	850	18875
278			18876	852	18875
280	REFLECTOR 1 POSITION	9	18206	854	18221
282	REFLECTOR 2 POSITION	9	16793	856	16792
284	REFL 1 POS 9 2ND LOOK	9	21449	858	21449
286	REFL 2 POS 9 2ND LOOK	9	1950	860	1950
288	NADIR SAMPLE	3	1950	862	1950
290			16225	864	16225
292			16663	866	16663

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294		872	17000	REFLECTOR 1 POSITION	CH 5
296		874	16806	REFLECTOR 2 POSITION	CH 6
298		876	16390	REFL 1 POS 10	CH 7
300		878	16382	REFL 2 POS 10	CH 8
302		880	17498	REFL 1 POSITION	CH 9
304		882	16869	REFL 2 POSITION	CH 10
306		884	18873	REFL 1 2ND LOOK	CH 11
308		886	18877	REFL 2 2ND LOOK	CH 12
310		888	18201	NADIR SAMPLE	CH 13
312		890	20209		CH 14
314	REFLECTOR 1 POSITION	10	2149	REFLECTOR 1 POSITION	CH 15
316	REFLECTOR 2 POSITION	10	2149	REFLECTOR 2 POSITION	CH 15
318	REFL 1 POS 10	2ND LOOK	2149	REFL 1 POS 27	CH 15
320	REFL 2 POS 10	2ND LOOK	2149	REFL 2 POS 27	CH 15
322	NADIR SAMPLE	10	2149	NADIR SAMPLE	CH 27
324			16223		CH 3
326			16661		CH 4
328			16909		CH 5
330			16809		CH 6
332			16393		CH 7
334			16381		CH 8
336			16301		CH 9
338			1674		CH 10
340			18868		CH 11
342			18204		CH 12
344			20234		CH 13
346			16759		CH 14
348	REFLECTOR 1 POSITION	11	2149	REFLECTOR 1 POSITION	CH 15
350	REFLECTOR 2 POSITION	11	2149	REFLECTOR 2 POSITION	CH 15
352	REFL 1 POS 11	2ND LOOK	2149	REFL 1 POS 28	CH 15
354	REFL 2 POS 11	2ND LOOK	2149	REFL 2 POS 28	CH 15
356	NADIR SAMPLE	11	2149	NADIR SAMPLE	CH 28
358			16224		CH 3
360			16663		CH 4
362			16603		CH 5
364			16809		CH 6
366			16387		CH 7
368			16385		CH 8
370			16301		CH 9
372			16872		CH 10
374			18864		CH 11
376			18765		CH 12
378			18208		CH 13
380			20201		CH 14
382	REFLECTOR 1 POSITION	12	2149	REFLECTOR 1 POSITION	CH 15
384	REFLECTOR 2 POSITION	12	2149	REFLECTOR 2 POSITION	CH 15
386	REFL 1 POS 12	2ND LOOK	2149	REFL 1 POS 29	CH 15
388	REFL 2 POS 12	2ND LOOK	2149	REFL 2 POS 29	CH 15
390	NADIR SAMPLE	12	2149	NADIR SAMPLE	CH 29
392			16218		CH 3

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NADIR MODE

LEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394		972			16662
396		974			17001
398		976			116804
400		978			116390
402		980			116385
404		982			117501
406		984			116866
408		986			118875
410		988			1188756
412		990			118198
414		992			20209
416	REFLECTOR 1 POSITION	13	CH 14	1 POSITION	30
418	REFLECTOR 2 POSITION	13	CH 14	2 POSITION	30
420	REFL 1 POS 13	2ND LOOK	CH 14	30	2ND LOOK
422	REFL 2 POS 13	2ND LOOK	CH 14	30	2ND LOOK
424	NADIR SAMPLE	13	CH 15	30	2ND LOOK
426			CH 15	30	2ND LOOK
428			CH 15	30	2ND LOOK
430			CH 15	30	2ND LOOK
432			CH 15	30	2ND LOOK
434			CH 15	30	2ND LOOK
436			CH 15	30	2ND LOOK
438			CH 15	30	2ND LOOK
440			CH 15	30	2ND LOOK
442			CH 15	30	2ND LOOK
444			CH 15	30	2ND LOOK
446			CH 15	30	2ND LOOK
448			CH 15	30	2ND LOOK
450	REFLECTOR 1 POSITION	14	CH 14	1 POSITION	14
452	REFLECTOR 2 POSITION	14	CH 14	2 POSITION	14
454	REFL 1 POS 14	2ND LOOK	CH 14	30	2ND LOOK
456	REFL 2 POS 14	2ND LOOK	CH 14	30	2ND LOOK
458	NADIR SAMPLE	14	CH 14	30	2ND LOOK
460			CH 15	30	2ND LOOK
462			CH 15	30	2ND LOOK
464			CH 15	30	2ND LOOK
466			CH 15	30	2ND LOOK
468			CH 15	30	2ND LOOK
470			CH 15	30	2ND LOOK
472			CH 15	30	2ND LOOK
474			CH 15	30	2ND LOOK
476			CH 15	30	2ND LOOK
478			CH 15	30	2ND LOOK
480			CH 15	30	2ND LOOK
482	REFLECTOR 1 POSITION	15	CH 15	1 POSITION	15
484	REFLECTOR 2 POSITION	15	CH 15	2 POSITION	15
486	REFL 1 POS 15	2ND LOOK	CH 15	30	2ND LOOK
488	REFL 2 POS 15	2ND LOOK	CH 15	30	2ND LOOK
490			CH 15	30	2ND LOOK
492			CH 15	30	2ND LOOK

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NADIR MODE

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	NADIR SAMPLE	15	494	REFLECTOR 1 POSITION	3
498		CH	498	REFLECTOR 1 POSITION	4
500		CH	500	REFLECTOR 2 POSITION	5
502		CH	502	REFLECTOR 2 POSITION	6
504		CH	504	REFL 1 POS 1	7
508		CH	508	REFL 1 POS 1	8
510		CH	510	REFL 1 POS 1	9
512		CH	512	REFL 1 POS 1	10
514		CH	514	REFL 2 POS 1	11
516		CH	516	REFL 2 POS 1	12
518		CH	518	REFL 2 POS 1	13
520		CH	520	REFL 2 POS 1	14
524		CH	524	REFL 2 POS 1	15
526		CH	526	REFL 2 POS 1	16
528		CH	528	REFL 2 POS 1	17
530		CH	530	REFL 2 POS 1	18
532		CH	532	REFL 2 POS 1	19
534		CH	534	REFL 2 POS 1	20
536		CH	536	REFL 2 POS 1	21
538		CH	538	REFL 2 POS 1	22
540		CH	540	REFL 2 POS 1	23
542		CH	542	REFL 2 POS 1	24
544		CH	544	REFL 2 POS 1	25
546		CH	546	REFL 2 POS 1	26
552		CH	552	REFL 2 POS 1	27
554		CH	554	REFL 2 POS 1	28
556		CH	556	REFL 2 POS 1	29
558		CH	558	REFL 2 POS 1	30
560		CH	560	REFL 2 POS 1	31
564		CH	564	REFL 2 POS 1	32
568		CH	568	REFL 2 POS 1	33
570		CH	570	REFL 2 POS 1	34
494	REFLECTOR 1 WARM	1072	494	REFLECTOR 1 WARM	1074
498		11076	498	REFLECTOR 1 WARM	11080
500		11078	500	REFLECTOR 1 WARM	11084
502		11080	502	REFLECTOR 1 WARM	11088
504		11082	504	REFLECTOR 1 WARM	11092
508		11084	508	REFLECTOR 1 WARM	11096
510		11086	510	REFLECTOR 1 WARM	11100
512		11088	512	REFLECTOR 1 WARM	11104
514		11090	514	REFLECTOR 1 WARM	11108
516		11092	516	REFLECTOR 1 WARM	11112
518		11094	518	REFLECTOR 1 WARM	11116
520		11096	520	REFLECTOR 1 WARM	11120
524		11098	524	REFLECTOR 1 WARM	11124
526		11100	526	REFLECTOR 1 WARM	11128
528		11104	528	REFLECTOR 1 WARM	11132
530		11108	530	REFLECTOR 1 WARM	11136
532		11112	532	REFLECTOR 1 WARM	11140
534		11116	534	REFLECTOR 1 WARM	11144
536		11120	536	REFLECTOR 1 WARM	11148
538		11124	538	REFLECTOR 1 WARM	11152
540		11128	540	REFLECTOR 1 WARM	11156
542		11132	542	REFLECTOR 1 WARM	11160
544		11136	544	REFLECTOR 1 WARM	11164
546		11140	546	REFLECTOR 1 WARM	11168
552		11144	552	REFLECTOR 1 WARM	11172
554		11148	554	REFLECTOR 1 WARM	11176
556		11152	556	REFLECTOR 1 WARM	11180
558		11156	558	REFLECTOR 1 WARM	11184
560		11160	560	REFLECTOR 1 WARM	11188
564		11164	564	REFLECTOR 1 WARM	11192
568		11168	568	REFLECTOR 1 WARM	11196
570		11172	570	REFLECTOR 1 WARM	11200
494	REFLECTOR 2 WARM	16218	494	REFLECTOR 2 WARM	16664
498		16664	498	REFLECTOR 2 WARM	16808
500		16802	500	REFLECTOR 2 WARM	16816
502		16814	502	REFLECTOR 2 WARM	16824
504		16822	504	REFLECTOR 2 WARM	16830
508		16838	508	REFLECTOR 2 WARM	16846
510		16852	510	REFLECTOR 2 WARM	16860
512		16866	512	REFLECTOR 2 WARM	16873
514		16881	514	REFLECTOR 2 WARM	16887
516		16892	516	REFLECTOR 2 WARM	16907
518		16904	518	REFLECTOR 2 WARM	16913
520		16919	520	REFLECTOR 2 WARM	16925
524		16950	524	REFLECTOR 2 WARM	16950
526		16956	526	REFLECTOR 2 WARM	16956
528		16964	528	REFLECTOR 2 WARM	16964
530		16973	530	REFLECTOR 2 WARM	16973
532		16981	532	REFLECTOR 2 WARM	16981
534		16987	534	REFLECTOR 2 WARM	16987
536		16993	536	REFLECTOR 2 WARM	16993
538		16999	538	REFLECTOR 2 WARM	16999
540		17005	540	REFLECTOR 2 WARM	17005
542		17011	542	REFLECTOR 2 WARM	17011
544		17017	544	REFLECTOR 2 WARM	17017
546		17023	546	REFLECTOR 2 WARM	17023
552		17049	552	REFLECTOR 2 WARM	17049
554		17050	554	REFLECTOR 2 WARM	17050
556		17055	556	REFLECTOR 2 WARM	17055
558		17059	558	REFLECTOR 2 WARM	17059
560		17060	560	REFLECTOR 2 WARM	17060
564		17067	564	REFLECTOR 2 WARM	17067
568		17073	568	REFLECTOR 2 WARM	17073
570		17079	570	REFLECTOR 2 WARM	17079
494	REFL 1 DATA 1	11115	494	REFL 1 DATA 1	11115
498		11113	498	REFL 1 DATA 1	11113
500		11112	500	REFL 1 DATA 1	11112
502		11111	502	REFL 1 DATA 1	11111
504		11110	504	REFL 1 DATA 1	11110
508		11109	508	REFL 1 DATA 1	11109
510		11108	510	REFL 1 DATA 1	11108
512		11107	512	REFL 1 DATA 1	11107
514		11106	514	REFL 1 DATA 1	11106
516		11105	516	REFL 1 DATA 1	11105
518		11104	518	REFL 1 DATA 1	11104
520		11103	520	REFL 1 DATA 1	11103
524		11102	524	REFL 1 DATA 1	11102
526		11101	526	REFL 1 DATA 1	11101
528		11100	528	REFL 1 DATA 1	11100
530		11109	530	REFL 1 DATA 1	11109
532		11108	532	REFL 1 DATA 1	11108
534		11107	534	REFL 1 DATA 1	11107
536		11106	536	REFL 1 DATA 1	11106
538		11105	538	REFL 1 DATA 1	11105
540		11104	540	REFL 1 DATA 1	11104
542		11103	542	REFL 1 DATA 1	11103
544		11102	544	REFL 1 DATA 1	11102
546		11101	546	REFL 1 DATA 1	11101
552		11100	552	REFL 1 DATA 1	11100
554		11109	554	REFL 1 DATA 1	11109
556		11108	556	REFL 1 DATA 1	11108
558		11107	558	REFL 1 DATA 1	11107
560		11106	560	REFL 1 DATA 1	11106
564		11105	564	REFL 1 DATA 1	11105
568		11104	568	REFL 1 DATA 1	11104
570		11103	570	REFL 1 DATA 1	11103
494	REFL 2 DATA 1	11115	494	REFL 2 DATA 2	11115
498		11113	498	REFL 2 DATA 2	11113
500		11112	500	REFL 2 DATA 2	11112
502		11111	502	REFL 2 DATA 2	11111
504		11110	504	REFL 2 DATA 2	11110
508		11109	508	REFL 2 DATA 2	11109
510		11108	510	REFL 2 DATA 2	11108
512		11107	512	REFL 2 DATA 2	11107
514		11106	514	REFL 2 DATA 2	11106
516		11105	516	REFL 2 DATA 2	11105
518		11104	518	REFL 2 DATA 2	11104
520		11103	520	REFL 2 DATA 2	11103
524		11102	524	REFL 2 DATA 2	11102
526		11101	526	REFL 2 DATA 2	11101
528		11100	528	REFL 2 DATA 2	11100
530		11109	530	REFL 2 DATA 2	11109
532		11108	532	REFL 2 DATA 2	11108
534		11107	534	REFL 2 DATA 2	11107
536		11106	536	REFL 2 DATA 2	11106
538		11105	538	REFL 2 DATA 2	11105
540		11104	540	REFL 2 DATA 2	11104
542		11103	542	REFL 2 DATA 2	11103
544		11102	544	REFL 2 DATA 2	11102
546		11101	546	REFL 2 DATA 2	11101
552		11100	552	REFL 2 DATA 2	11100
554		11109	554	REFL 2 DATA 2	11109
556		11108	556	REFL 2 DATA 2	11108
558		11107	558	REFL 2 DATA 2	11107
560		11106	560	REFL 2 DATA 2	11106
564		11105	564	REFL 2 DATA 2	11105
568		11104	568	REFL 2 DATA 2	11104
570		11103	570	REFL 2 DATA 2	11103
494	REFL 1 DATA 2	11115	494	REFL 1 DATA 3	11115
498		11113	498	REFL 1 DATA 3	11113
500		11112	500	REFL 1 DATA 3	11112
502		11111	502	REFL 1 DATA 3	11111
504		11110	504	REFL 1 DATA 3	11110
508		11109	508	REFL 1 DATA 3	11109
510		11108	510	REFL 1 DATA 3	11108
512		11107	512	REFL 1 DATA 3	11107
514		11106	514	REFL 1 DATA 3	11106
516		11105	516	REFL 1 DATA 3	11105
518		11104	518	REFL 1 DATA 3	11104
520		11103	520	REFL 1 DATA 3	11103
524		11102	524	REFL 1 DATA 3	11102
526		11101	526	REFL 1 DATA 3	11101
528		11100	528	REFL 1 DATA 3	11100
530		11109	530	REFL 1 DATA 3	11109
532		11108	532	REFL 1 DATA 3	11108
534		11107	534	REFL 1 DATA 3	11107
536		11106	536	REFL 1 DATA 3	11106
538		11105	538	REFL 1 DATA 3	11105
540		11104	540	REFL 1 DATA 3	11104
542		11103	542	REFL 1 DATA 3	11103
544		11102	544	REFL 1 DATA 3	11102
546		11101	546	REFL 1 DATA 3	11101
552		11100	552	REFL 1 DATA 3	11100
554		11109	554	REFL 1 DATA 3	11109
556		11108	556	REFL 1 DATA 3	11108
558		11107	558	REFL 1 DATA 3	11107
560		11106	560	REFL 1 DATA 3	11106
564		11105	564	REFL 1 DATA 3	11105
568		11104	568	REFL 1 DATA 3	11104
570		11103	570	REFL 1 DATA 3	11103
494	REFL 2 DATA 3	11115	494	REFL 2 DATA 4	11115
498		11113	498	REFL 2 DATA 4	11113
500		11112	500	REFL 2 DATA 4	11112
502		11111	502	REFL 2 DATA 4	11111
504		11110	504	REFL 2 DATA 4	11110
508		11109	508	REFL 2 DATA 4	11109
510		11108	510	REFL 2 DATA 4	11108
512		11107	512	REFL 2 DATA 4	11107
514		11106	514	REFL 2 DATA 4	11106
516		11105	516	REFL 2 DATA 4	11105
518		11104	518	REFL 2 DATA 4	11104
520		11103	520	REFL 2 DATA 4	11103
524		11102	524	REFL 2 DATA 4	11102
526		11101	526	REFL 2 DATA 4	11101
528		11100	528	REFL 2 DATA 4	11100
530		11109	530	REFL 2 DATA 4	11109
532		11108	532	REFL 2 DATA 4	11108
534		11107	534	REFL 2 DATA 4	11107
536		11106	536	REFL 2 DATA 4	11106
538		11105	538	REFL 2 DATA 4	11105
540		11104	540	REFL 2 DATA 4	11104
542		11103	542	REFL 2 DATA 4	11103
544		11102	544	REFL 2 DATA 4	11102
546		11101	546	REFL 2 DATA 4	11101
552		11100	552	REFL 2 DATA 4	11100
554		11109	554	REFL 2 DATA 4	11109
556		11108	556	REFL 2 DATA 4	11108

AMSU A1\_17 A1.EXE;62 DIGITAL A DATA  
NADIR MODE

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16441	20.42	
1092	SCAN MOTOR A1-2	16848	20.78	
1094	FEEDHORN A1-1	17687	22.03	
1096	FEEDHORN A1-2	18362	21.90	
1098	RF MUX A1-1	18288	22.23	.95
1100	RF MUX A1-2	19958	22.26	.65
1102	LOCAL OSCILLATOR CHANNEL 3	19798	22.26	.88
1104	LOCAL OSCILLATOR CHANNEL 4	19792	22.26	.31
1106	LOCAL OSCILLATOR CHANNEL 5	18400	22.24	.03
1108	LOCAL OSCILLATOR CHANNEL 6	18786	22.24	.67
1110	LOCAL OSCILLATOR CHANNEL 7	19447	22.26	.33
1112	LOCAL OSCILLATOR CHANNEL 8	19340	22.26	.75
1114	LOCAL OSCILLATOR CHANNEL 15	17942	22.23	.77
PLL LO	#2 CHANNELS 9 THROUGH 14	21014	22.29	.45
PLL LO	#1 CHANNELS 9 THROUGH 14	329320	22.25	.86
SPARE (NOT USED)		19099	22.25	.58
11118	MIXER//IF AMPLIFIER CHANNEL 3	19099	22.25	.49
11120	MIXER//IF AMPLIFIER CHANNEL 4	18583	22.24	.22
11122	MIXER//IF AMPLIFIER CHANNEL 5	18764	22.24	.67
11124	MIXER//IF AMPLIFIER CHANNEL 6	18915	22.25	.61
11126	MIXER//IF AMPLIFIER CHANNEL 7	18010	22.23	.87
11128	MIXER//IF AMPLIFIER CHANNEL 8	19320	22.26	.23
11130	MIXER//IF AMPLIFIER CHANNEL 9	19360	22.26	.15
11132	MIXER//IF AMPLIFIER CHANNEL 10	19794	22.26	.36
11134	MIXER//IF AMPLIFIER CHANNEL 11	19412	22.23	.89
11136	IF AMPLIFIER CHANNEL 14	18408	22.28	.72
11138	IF AMPLIFIER CHANNEL 15	20987	22.23	.96
11140	IF AMPLIFIER CHANNEL 11 THRU 14	18587	22.23	.85
11142	IF AMPLIFIER CHANNEL 9	18204	22.23	.79
11144	IF AMPLIFIER CHANNEL 10	18178	22.25	.12
11146	DC/DC CONVERTER	18904	22.22	.48
11148	IF AMPLIFIER CHANNEL 13	17804	22.20	.19
11150	IF AMPLIFIER CHANNEL 14	19024	22.20	.22
11152	IF AMPLIFIER CHANNEL 11	1562	22.20	.26
11154	RF SHELF A1-1	21614	22.20	.27
11156	DETECTOR/PREAMPLIFIER ASSEMBLY	21322	22.00	.30
11158	A1-1 WARM LOAD 1	1506	22.00	.67
11160	A1-1 WARM LOAD 1	1883	22.17	.64
11162	A1-1 WARM LOAD 2	1709	22.17	.71
11164	A1-1 WARM LOAD 3	1744	22.16	.74
11166	A1-1 WARM LOAD 4	1674	22.05	.57
11168	A1-1 WARM LOAD CENTER	1538	22.15	
11170	A1-2 WARM LOAD 1	24883	24.88	
11172	A1-2 WARM LOAD 2			
11174	A1-2 WARM LOAD 3			
11176	A1-2 WARM LOAD 4			
11178	A1-2 WARM LOAD CENTER			
11180	TEMP SENSOR REFERENCE VOLTAGE			

DESCRIPTION	STATUS	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON	ON	ON	ON
SCANNER A1-2 POWER	ON	ON	PLL0 # 1	PLL0 # 1
PLL POWER	NO	NO	NO	NO
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	YES	YES
ANTENNA IN NADIR POSITION MODE	YES	NO	NO	NO
ANTENNA IN FULL SCAN MODE	NO	OFF	OFF	OFF
SURVIVAL HEATER POWER	OFF	CONNECT	CONNECT	CONNECT
MODULE POWER	CONNECT	ZERO	ZERO	ZERO
COLD CAL POSITION MSB	ZERO	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO	ZERO
ANALOG DATA	DESCRIPTION	VALUE	DEG C	VALUE
A1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	215	22.9	215	22.9
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9
DESCRIPTION	ANALOG DATA	VALUE	DEG C	VALUE
A1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86
A1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	167	14.91
ANTENNA DRIVE +15 VDC	167	14.66	167	14.66
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	18.05	157	18.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.02	143	5.02
RECEIVER MIXER / IF +10 VDC	167	10.03	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	+15	VDC	167	14.99
PHASE LOCK LOOP (CHANNEL 9/14)	-15	VDC	142	-14.90
L.O. VOLTAGE CHANNEL 8	VDC	172	10.00	172
L.O. VOLTAGE CHANNEL 7	VDC	170	0.06	170
L.O. VOLTAGE CHANNEL 6	VDC	174	10.06	174
L.O. VOLTAGE CHANNEL 3	VDC	173	10.00	173
L.O. VOLTAGE CHANNEL 4	VDC	173	10.00	173
L.O. VOLTAGE CHANNEL 5	VDC	174	10.06	174
L.O. VOLTAGE CHANNEL 15	VDC	167	14.91	167

**TEST DATA SHEET 32**  
**Digital-A Data Output Nadir Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.4)**

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required =  $16,500 \pm 4000$  counts (Unless otherwise indicated).

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order:

*373234* S/N: *105*  
*R. Hay* *3/16/99*

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



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MSU A1-17 A1.EXE;62 NADIR MODE          R1 16-MAR 29 08:27:42   SCAN NUMBER 281
[ 5 ] DIGITAL A DATA ELEMENT 0000
[ 6 ] DIGITAL B DATA ELEMENT 00
[ 7 ] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA
CHANNEL 3
BP DATA BP DATA BP DATA BP DATA
1 162226 9 162222 17 162217 25 16220
2 162217 10 162221 18 162218 26 16218
3 162222 11 162222 19 162225 27 16215
4 162210 12 162214 20 162220 28 16218
5 162212 13 162215 21 162220 29 16216
6 162218 14 162215 22 162222 30 16216
7 162218 15 162217 23 162217 CC 0
8 162218 16 162221 24 162222 WC 0
[ 22 ] DOWN
[ 21 ] UP

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL
SELECT TOUCHSCREEN BUTTON 2
[ 1 ] RETURN

```

TDS 32

AMSU

A1-17 A1-EXE:62 NADIR MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL

SELECT TOUCHSCREEN BUTTON 2 [ 1 ] RETURN

[ 21 ] UP [ 22 ] DOWN

	BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	17496	9	17489	17	17496	25	17493	
2	17497	10	17496	18	17495	26	17492	
3	17496	11	17496	19	17495	27	17494	
4	17494	12	17492	20	17496	28	17497	
5	17494	13	17493	21	17496	29	17494	
6	17495	14	17497	22	17493	30	17496	
7	17495	15	17494	23	17493	30	17496	
8	17494	16	17498	24	17492	WC	0	

RADIOMETRIC DATA

CHANNEL 9

DATA

TEST DATA SHEET 33 (Sheet 1 of 2)  
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	✓
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	▼

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)



TEST DATA SHEET 33 (Sheet 2 of 2)  
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	▼

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* = Count of 24,552 +1765,1308.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234S/N: 105R. Haig 3/16/99

Test Systems Engineer

Date



MAR 17 1999



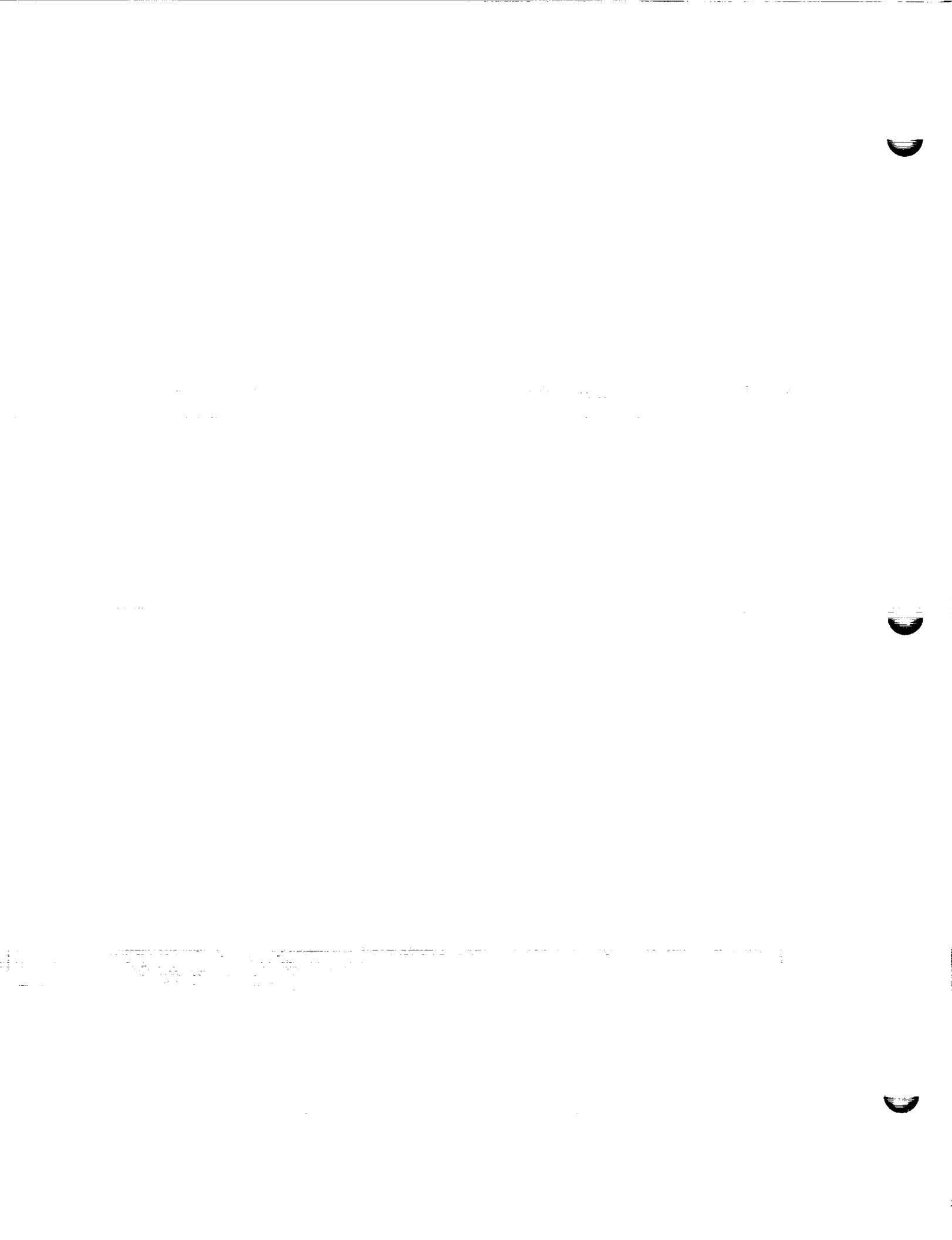
3/16/99

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1-EXE;62 NADIR MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:24:53 SCAN NUMBER 290

NO	DIGITAL A DATA	TEMP C	TEMPERATURES NO	1 TO 16	DATA	TEMP C
1	SCAN MOTOR A1-1	16459	20.45	9 LO CHANNEL 5	19898	26.52
2	SCAN MOTOR A1-2	16879	20.84	10 LO CHANNEL 6	18458	24.14
3	FEEDHORN A1-1	17740	22.13	11 LO CHANNEL 7	18870	24.83
4	FEEDHORN A1-2	18441	22.05	12 LO CHANNEL 8	19554	26.54
5	RF MUX A1-1	18360	23.85	13 LO CHANNEL 15	19434	26.93
6	RF MUX A1-2	18900	25.16	14 PLLO #2 CH 9/14	18029	23.94
7	LO CHANNEL 3	19910	26.86	15 PLLO #1 CH 9/14	21114	29.65
8	LO CHANNEL 4	20070	27.10	16 PLLO REFERENCE	32767	52.86
[ 21 ] UP	[ 22 ] DOWN	[ 22 ]				

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TDS 33

292

AMSU A1-17 A1.EXE;62 NADIR MODE

[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00

[ 7 ] ANALOG DATA ELEMENT 00

NO

17 MIXER IF CH 3

18 MIXER IF CH 4

19 MIXER IF CH 5

20 MIXER IF CH 6

21 MIXER IF CH 7

22 MIXER IF CH 8

23 MIXER IF CH 9/14

24 MIXER IF CH 15

[ 21 ] UP

DIGITAL A TEMPERATURES

DATA TEMP C

19448 25.67

19139 25.83

19222 25.72

18674 24.39

18864 24.86

19044 25.86

18103 24.05

19421 26.42

[ 22 ] DOWN

NO

17 MIXER IF CH 9/14

18 MIXER IF CH 10

19 DC/DC CONVERTER

20 MIXER IF CH 11

21 MIXER IF CH 13

22 MIXER IF CH 14

23 MIXER IF CH 12

24 POWER [ 4 ] ON

25 IF AMP CH 11

26 IF AMP CH 10

27 IF AMP CH 11

28 IF AMP CH 11

29 IF AMP CH 13

30 IF AMP CH 14

31 IF AMP CH 12

32 IF AMP CH 12

33 IF AMP CH 11

34 IF AMP CH 10

35 IF AMP CH 11

36 IF AMP CH 13

37 IF AMP CH 14

38 IF AMP CH 12

39 IF AMP CH 11

40 IF AMP CH 10

41 IF AMP CH 11

42 IF AMP CH 13

43 IF AMP CH 14

44 IF AMP CH 12

45 IF AMP CH 11

46 IF AMP CH 10

47 IF AMP CH 11

48 IF AMP CH 13

49 IF AMP CH 14

50 IF AMP CH 12

51 IF AMP CH 11

52 IF AMP CH 10

53 IF AMP CH 11

54 IF AMP CH 13

55 IF AMP CH 14

56 IF AMP CH 12

57 IF AMP CH 11

58 IF AMP CH 10

59 IF AMP CH 11

60 IF AMP CH 13

61 IF AMP CH 14

62 IF AMP CH 12

63 IF AMP CH 11

64 IF AMP CH 10

65 IF AMP CH 11

66 IF AMP CH 13

67 IF AMP CH 14

68 IF AMP CH 12

69 IF AMP CH 11

70 IF AMP CH 10

71 IF AMP CH 11

72 IF AMP CH 13

73 IF AMP CH 14

74 IF AMP CH 12

75 IF AMP CH 11

76 IF AMP CH 10

77 IF AMP CH 11

78 IF AMP CH 13

79 IF AMP CH 14

80 IF AMP CH 12

81 IF AMP CH 11

82 IF AMP CH 10

83 IF AMP CH 11

84 IF AMP CH 13

85 IF AMP CH 14

86 IF AMP CH 12

87 IF AMP CH 11

88 IF AMP CH 10

89 IF AMP CH 11

90 IF AMP CH 13

91 IF AMP CH 14

92 IF AMP CH 12

93 IF AMP CH 11

94 IF AMP CH 10

95 IF AMP CH 11

96 IF AMP CH 13

97 IF AMP CH 14

98 IF AMP CH 12

99 IF AMP CH 11

100 IF AMP CH 10

101 IF AMP CH 11

102 IF AMP CH 13

103 IF AMP CH 14

104 IF AMP CH 12

105 IF AMP CH 11

106 IF AMP CH 10

107 IF AMP CH 11

108 IF AMP CH 13

109 IF AMP CH 14

110 IF AMP CH 12

111 IF AMP CH 11

112 IF AMP CH 10

113 IF AMP CH 11

114 IF AMP CH 13

115 IF AMP CH 14

116 IF AMP CH 12

117 IF AMP CH 11

118 IF AMP CH 10

119 IF AMP CH 11

120 IF AMP CH 13

121 IF AMP CH 14

122 IF AMP CH 12

123 IF AMP CH 11

124 IF AMP CH 10

125 IF AMP CH 11

126 IF AMP CH 13

127 IF AMP CH 14

128 IF AMP CH 12

129 IF AMP CH 11

130 IF AMP CH 10

131 IF AMP CH 11

132 IF AMP CH 13

133 IF AMP CH 14

134 IF AMP CH 12

135 IF AMP CH 11

136 IF AMP CH 10

137 IF AMP CH 11

138 IF AMP CH 13

139 IF AMP CH 14

140 IF AMP CH 12

141 IF AMP CH 11

142 IF AMP CH 10

143 IF AMP CH 11

144 IF AMP CH 13

145 IF AMP CH 14

146 IF AMP CH 12

147 IF AMP CH 11

148 IF AMP CH 10

149 IF AMP CH 11

150 IF AMP CH 13

151 IF AMP CH 14

152 IF AMP CH 12

153 IF AMP CH 11

154 IF AMP CH 10

155 IF AMP CH 11

156 IF AMP CH 13

157 IF AMP CH 14

158 IF AMP CH 12

159 IF AMP CH 11

160 IF AMP CH 10

161 IF AMP CH 11

162 IF AMP CH 13

163 IF AMP CH 14

164 IF AMP CH 12

165 IF AMP CH 11

166 IF AMP CH 10

167 IF AMP CH 11

168 IF AMP CH 13

169 IF AMP CH 14

170 IF AMP CH 12

171 IF AMP CH 11

172 IF AMP CH 10

173 IF AMP CH 11

174 IF AMP CH 13

175 IF AMP CH 14

176 IF AMP CH 12

177 IF AMP CH 11

178 IF AMP CH 10

179 IF AMP CH 11

180 IF AMP CH 13

181 IF AMP CH 14

182 IF AMP CH 12

183 IF AMP CH 11

184 IF AMP CH 10

185 IF AMP CH 11

186 IF AMP CH 13

187 IF AMP CH 14

188 IF AMP CH 12

189 IF AMP CH 11

190 IF AMP CH 10

191 IF AMP CH 11

192 IF AMP CH 13

193 IF AMP CH 14

194 IF AMP CH 12

195 IF AMP CH 11

196 IF AMP CH 10

197 IF AMP CH 11

198 IF AMP CH 13

199 IF AMP CH 14

200 IF AMP CH 12

201 IF AMP CH 11

202 IF AMP CH 10

203 IF AMP CH 11

204 IF AMP CH 13

205 IF AMP CH 14

206 IF AMP CH 12

207 IF AMP CH 11

208 IF AMP CH 10

209 IF AMP CH 11

210 IF AMP CH 13

211 IF AMP CH 14

212 IF AMP CH 12

213 IF AMP CH 11

214 IF AMP CH 10

215 IF AMP CH 11

216 IF AMP CH 13

217 IF AMP CH 14

218 IF AMP CH 12

219 IF AMP CH 11

220 IF AMP CH 10

221 IF AMP CH 11

222 IF AMP CH 13

223 IF AMP CH 14

224 IF AMP CH 12

225 IF AMP CH 11

226 IF AMP CH 10

227 IF AMP CH 11

228 IF AMP CH 13

229 IF AMP CH 14

230 IF AMP CH 12

231 IF AMP CH 11

232 IF AMP CH 10

233 IF AMP CH 11

234 IF AMP CH 13

235 IF AMP CH 14

236 IF AMP CH 12

237 IF AMP CH 11

238 IF AMP CH 10

239 IF AMP CH 11

240 IF AMP CH 13

241 IF AMP CH 14

242 IF AMP CH 12

243 IF AMP CH 11

244 IF AMP CH 10

245 IF AMP CH 11

246 IF AMP CH 13

247 IF AMP CH 14

248 IF AMP CH 12

249 IF AMP CH 11

250 IF AMP CH 10

251 IF AMP CH 11

252 IF AMP CH 13

253 IF AMP CH 14

254 IF AMP CH 12

255 IF AMP CH 11

256 IF AMP CH 10

257 IF AMP CH 11

258 IF AMP CH 13

259 IF AMP CH 14

260 IF AMP CH 12

261 IF AMP CH 11

262 IF AMP CH 10

AMSU A1-17 A1-EXE;62 NADIR MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

P1 16-MAR-99 08:25:18 SCAN NUMBER 293

NO	DIGITAL A DATA	TEMP C	TEMPERATURES NO	TO 46	DATA	TEMP C
31	IF AMP CH 14	18302	24.04	39 A1-1	WARM LOAD	4 21333
32	IF AMP CH 12	18277	23.98	40 A1-1	WARM LOAD	C 21519
33	RF SHELF A1-1	19128	25.32	41 A1-2	WARM LOAD	1 21915
34	RF SHELF A1-2	19097	25.44	42 A1-2	WARM LOAD	2 21744
35	DETECTOR/PREAMP	17878	22.63	43 A1-2	WARM LOAD	3 21776
36	A1-1 WARM LOAD 1	21375	20.22	44 A1-2	WARM LOAD	4 21705
37	A1-1 WARM LOAD 2	21580	20.26	45 A1-2	WARM LOAD	C 21570
38	A1-1 WARM LOAD 3	21627	[ 20.28 ] DOWN	THERMAL REFERENCE	24883	
[ 21 ] UP			[ 22 ] DOWN			

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2



**TEST DATA SHEET 34**  
Analog Telemetry Verification by Way of Connector J6 (Paragraph 3.2.4.3.5.1)

	From	Description	To	Measured (volts)	Required (volts)	Pass/Fail
03	J6-02	RF Shelf A1-1 Temp.	J1-10	4.36V	3.5 ± 2 V	P
01	J6-03	A1-1 Scan Motor Temp.	J1-10	4.31V	3.5 ± 2 V	
05	J6-04	Warm Load A1-1 Temp.	J1-10	4.32V	3.5 ± 2 V	
04	J6-21	RF Shelf A1-2 Temp.	J1-10	4.39V	3.5 ± 2 V	
02	J6-22	A1-2 Scan Motor Temp.	J1-10	4.34V	3.5 ± 2 V	
06	J6-23	Warm Load A1-2 Temp.	J1-10	4.35V	3.5 ± 2 V	+
25	J6-06	PLLO No. 2 Lock detect	J2-03	0.7V	***	P
07	J6-08	A1-1 Drive Motor Curr.	J2-03	2.03V	3.5 ± 2 V	
10	J6-09	+15 V Antenna Drive	J2-03	3.32V	3.5 ± 2 V	
15	J6-10	+5 V Antenna Drive	J2-03	2.99V	3.5 ± 2 V	
09	J6-11	+15 V Signal Processing	J2-03	3.47V	3.5 ± 2 V	
14	J6-12	+5 V Signal Processing	J2-03	2.96V	3.5 ± 2 V	
22	J6-13	L.O. Voltage Channel 3	J2-03	3.51V	3.5 ± 2 V	
24	J6-14	L.O. Voltage Channel 5	J2-03	3.49V	3.5 ± 2 V	
20	J6-15	L.O. Voltage Channel 7	J2-03	3.48V	3.5 ± 2 V	
16	J6-16	+15 V PLL LO Ch 9-14	J2-03	3.43V	3.5 ± 2 V	
17	J6-17	*	J2-03	3.44V	3.5 ± 2 V	
27	J6-18	L.O. Voltage Channel 15	J2-03	3.46V	3.5 ± 2 V	
26	J6-25	PLLO No. 1 Lock detect	J2-03	4.43V	***	
08	J6-27	A1-2 Drive Motor Curr.	J2-03	2.00V	3.5 ± 2 V	
12	J6-28	-15 V Antenna Drive	J2-03	3.04V	3.5 ± 2 V	
11	J6-29	-15 V Signal Processing	J2-03	3.04V	3.5 ± 2 V	
23	J6-30	L.O. Voltage Channel 4	J2-03	3.50V	3.5 ± 2 V	
21	J6-31	L.O. Voltage Channel 6	J2-03	3.48V	3.5 ± 2 V	
19	J6-32	L.O. Voltage Channel 8	J2-03	3.49V	3.5 ± 2 V	
18	J6-33	-15 V PLL LO Ch 9-14	J2-03	2.90V	3.5 ± 2 V	
13	J6-34	**	J2-03	3.19V	3.5 ± 2 V	+

\* +8.5 V PLL LO Ch 9-14 for S/N 101-104, +10V Mixer Amp for S/N 105 and above.

\*\* +8 V Receiver for S/N 101-104, +8 V IF Amp for S/N 105 and above.

\*\*\* 4.5 ± 0.5 when locked, 0.5 ± 0.5 when unlocked or OFF. One must be locked.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Haig 3/14/89

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control



9/16/94

Date



TEST DATA SHEET 35 (Sheet 1 of 2)  
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (Deg. C)	Required (Deg. C)	Pass/Fail
01	A1-1 Scanner Motor	Temp	_____	25 ± 15	✓
02	A1-2 Scanner Motor	Temp	_____	25 ± 15	✗
03	A1-1 RF Shelf	Temp	_____	25 ± 15	_____
04	A1-2 RF Shelf	Temp	_____	25 ± 15	_____
05	A1-1 Warm Load	Temp	_____	25 ± 15	_____
06	A1-2 Warm Load	Temp	_____	25 ± 15	✗
			(mAmps)	(mAmps)	
07	Ant A1-1 Drv Motor Current		_____	125 mA (Max)	✓
08	Ant A1-2 Drv Motor Current		_____	125 mA (Max)	✓

(\*) Data from the printout sheet. Rewriting data on this space is optional.

(Continued on sheet 2)

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
R. Haas 3/16/99

Test Systems Engineer

Date



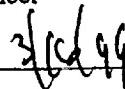
MAR 17 1999

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



TEST DATA SHEET 35 (Sheet 2 of 2)  
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (volts)	Required (volts)	Pass/ Fail
09	Signal Processing	+15 V	_____	15.0 ± 0.5 V	P
10	Antenna Drive	+15 V	_____	15.0 ± 0.5 V	_____
11	Signal Processing	-15 V	_____	-15.0 ± 0.5 V	_____
12	Antenna Drive	-15 V	_____	-15.0 ± 0.5 V	_____
13	Receiver	+8 V	_____	8.0 ± 0.5 V	_____
14	Sig Processing	+5 V	_____	5.0 ± 0.5 V	_____
15	Antenna Drive	+5 V	_____	5.0 ± 0.5 V	_____
16	Phase Lock Loop Ch 9-14 (a)/ Receiver/Mixer IF (b)	+8.5 V	_____	8.5 ± 0.5 V	_____
17	Phase Lock Loop Ch 9-14	+15 V	_____	15.0 ± 0.5 V	_____
18	Phase Lock Loop Ch 9-14	-15 V	_____	-15.0 ± 0.5 V	_____
19	L.O. #8	Ch-8	10.04 V	(**) ± 0.5 V	_____
20	L.O. #7	Ch-7	10.13 V	(**) ± 0.5 V	_____
21	L.O. #6	Ch-6	10.06 V	(**) ± 0.5 V	_____
22	L.O. #3	Ch-3	10.03 V	(**) ± 0.5 V	_____
23	L.O. #4	Ch-4	10.02 V	(**) ± 0.5 V	_____
24	L.O. #5	Ch-5	10.16 V	(**) ± 0.5 V	_____
25	PLLO No. 2 Lock Detect		4.40 V	(***)	_____
26	PLLO No. 1 Lock Detect		.08 V	(***)	_____
27	L.O. #15	Ch-15	14.91 V	(**) ± 0.5 V	↓

(\*) Data from the printout sheet. Rewriting data on this space is optional.

(\*\*) GDO voltages from the manufacturer data sheet for S/N 101-104; DRO CH3-8 10V, GDO CH15 15V for S/N 105 and above.

(\*\*\*) Locked PLO voltage 0 to +15 V, other PLO voltage ±15.0 V; one must be locked for S/N 101-104. Locked PLO voltage 4.0 ±1.0 V, other PLO voltage 0.0 ±0.2 V, one must be locked for S/N 105 and above.

(a) For S/N 101 through 104. (b) For S/N 105 and up.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

Test Systems Engineer

Date

Customer Representative

Date

Quality Control

Date

AMSU A1-17 A1-EXE;62 FULL SCAN MODE P2 16-MAR-99 08:58:42 SCAN NUMBER 102  
[ 5 ] DIGITAL A DATA ELEMENT 0000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

## ANALOG DATA 1 TO 18

1	A1-1	SCANR MOTOR	214	25.02	DEG	C 10	ANTENNA DRIVE	+15VDC	15.01
2	A1-2	SCANR MOTOR	214	25.86	DEG	C 11	SIGNAL PROCESSING	-15VDC	-15.00
3	A1-1	RF SHELF	215	23.37	DEG	C 12	ANTENNA DRIVE	-15VDC	-14.91
4	A1-2	RF SHELF	215	23.00	DEG	C 13	RECEIVER AMPLIFIER	8VDC	8.09
5	A1-1	WARM LOAD	219	28.62	DEG	C 14	SIGNAL PROCESSOR	5 VDC	5.07
6	A1-2	WARM LOAD	214	24.74	DEG	C 15	ANTENNA DRIVE	5 VDC	5.07
7	ANT A1-1	DRIVE MOTOR CURRENT	214	25.25	DEG	C 16	RECEIVER MIXER/IF	10VDC	10.03
8	ANT A1-2	DRIVE MOTOR CURRENT	45.67	45.67	DEG	C 17	PHASE LOCK LOOP CH9/14	+15VDC	14.99
9	SIGNAL PROCESSING	+15VDC	14.96	14.96	PHASE LOCK LOOP CH9/14	-15VDC	-14.85		
[ 21 ]	UP	[ 22 ]	DOWN						

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TD\\$35

AMSU A1-17 A1 EXE;62 FULL SCAN MODE P2 16-MAR-99 08:58:33 SCAN NUMBER 100  
[ 5 ] DIGITAL A DATA ELEMENT 000  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

## ANALOG DATA 10 TO 27

10 ANTENNA DRIVE 15VDC 15.00 19 L.O. VOLTAGE CH 8  
11 SIGNAL PROCESSING -15VDC -15.00 20 L.O. VOLTAGE CH 7  
12 ANTENNA DRIVE -15VDC -14.92 21 L.O. VOLTAGE CH 6  
13 RECEIVER AMPLIFIER -8VDC 8.09 22 L.O. VOLTAGE CH 3  
14 SIGNAL PROCESSOR 5VDC 5.07 23 L.O. VOLTAGE CH 4  
15 ANTENNA DRIVE 5VDC 5.06 24 L.O. VOLTAGE CH 5  
16 RECEIVER MIXER/IF 10VDC 10.03 25 PLL #2 LOCK DETECT  
17 PHASE LOCK LOOP CH9/14 15VDC 14.99 26 PLL #1 LOCK DETECT  
[ 21 ] UP [ 22 ] DOWN 14.85 27 L.O. VOLTAGE CH15  
0.08 14.91

POWER [ 4 ] ON SCREEN ONLY. [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 36  
Integrate/Hold and Dump Signal Verification (Paragraph 3.2.4.3.6.1)

ATTACH PHOTOGRAPH OR PLOT HERE

Parameter	Measured	Required	Pass/ Fail
Scope Channel-1: Integration/Hold			
Time Measured (A)*	165 ms	165 ms ± 10%	P
Time Measured (B)*	37.5 ms	35 ms ± 10%	P
Amplitude Measured	5.0 V	5.0 ± 0.2 V	P
Scope Channel-2: Dump Signal			
Time Measured (D)*	12.5 ms	9 ms to 15 ms	P
Amplitude Measured	5.0 V	5.0 ± 0.2 V	P

\* Refer to Figure 2 for waveform configuration.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
1.60 3/16/99

Test Systems Engineer

Date



MAR 17 1999

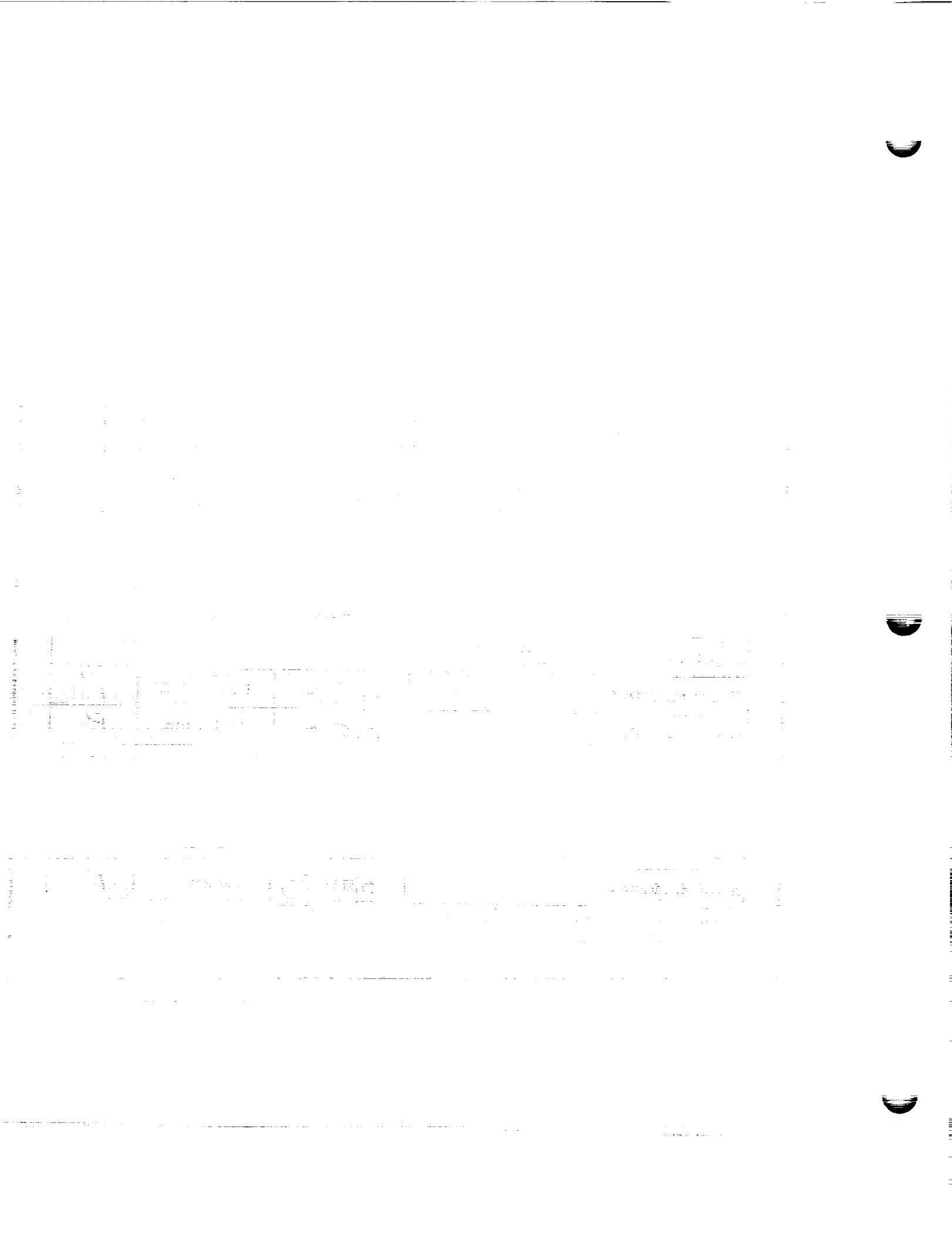
Customer Representative  
(Flight Hardware Only)

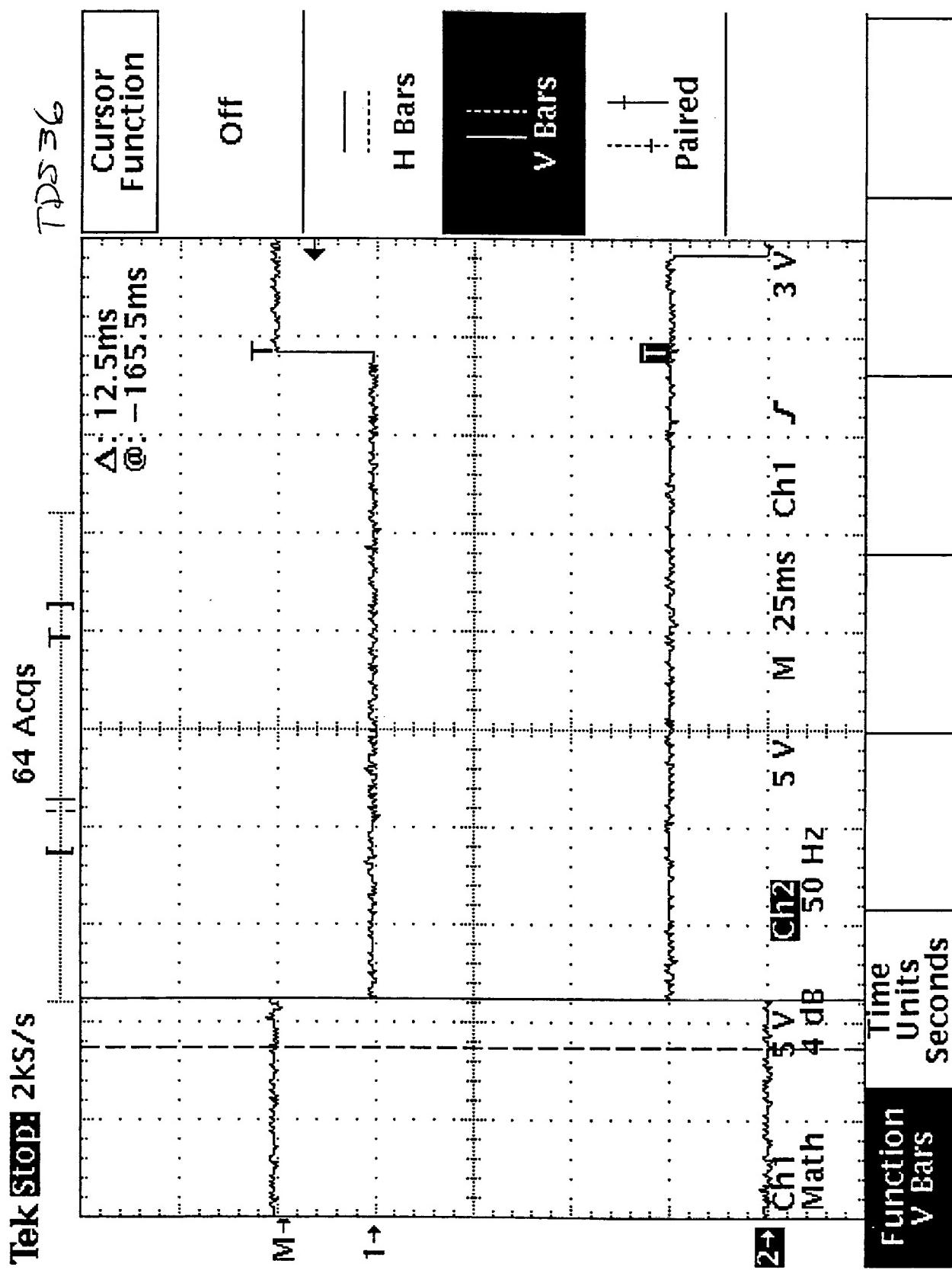
Date

Quality Control

Date

3/16/99







AE-26156/3B  
10 Mar 99

TEST DATA SHEET 37  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 03  
Frequency: 50.3 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D)\*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D)\*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 04  
Frequency: 52.8 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D)\*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D)\*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Haig Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

MAR 17 1999



Tek Stop: 2kS/s

267 Acqs

CHW 3

TDS 37

Cursor Function

$\Delta: 12.5 \text{ ms}$   
 $@: -165.5 \text{ ms}$

Off

H Bars

V Bars

Paired

Ch1 CH2 1 V 1.56 V  
M 25ms M 25ms

Ch1 CH2 4 dB 50 Hz  
Math

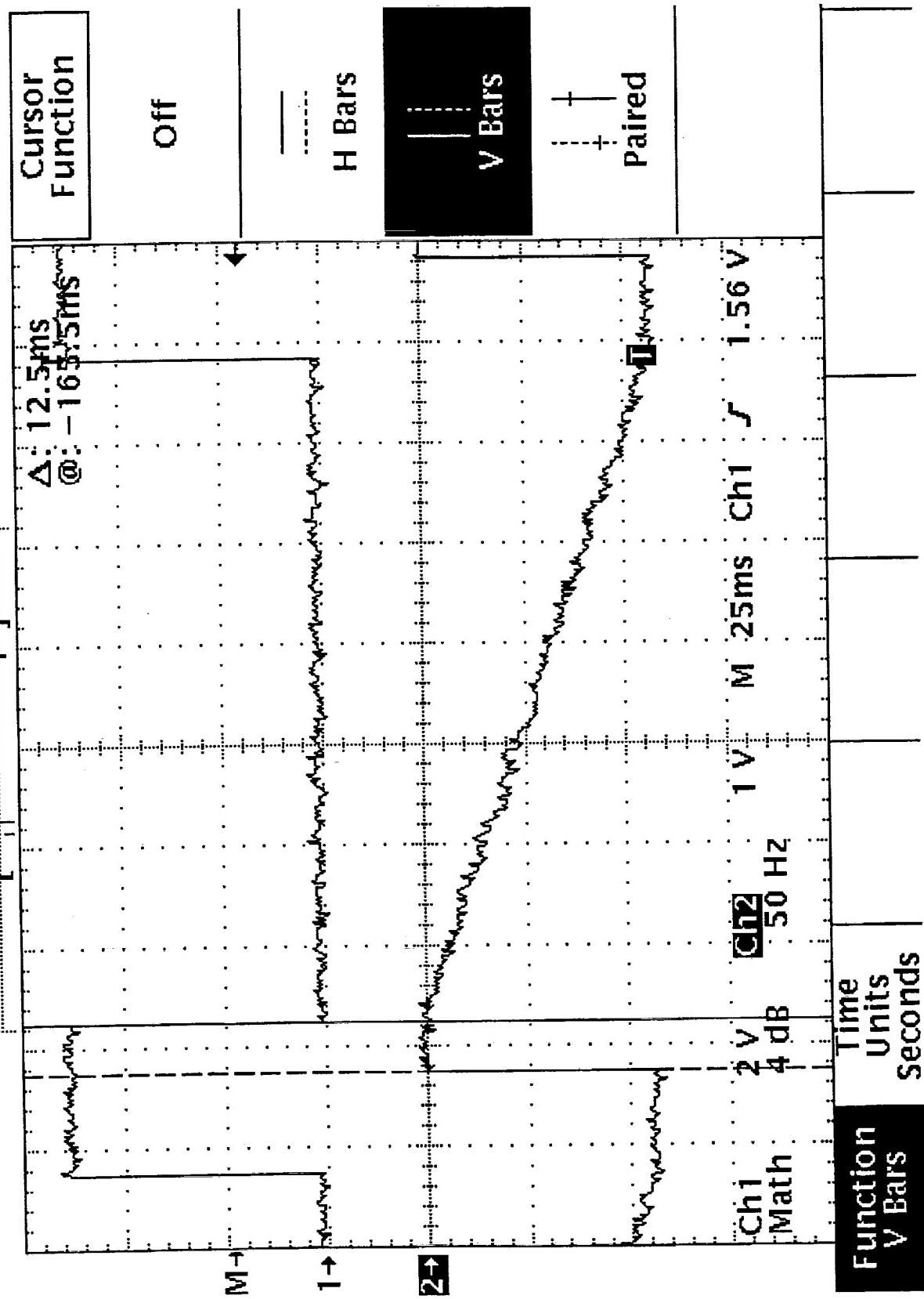
Function V Bars  
Time Units Seconds

M

1 →

2 →

Tek Stop 2kS/s 48 Acqs T]



TEST DATA SHEET 38  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 05  
Frequency: \_\_\_\_\_ 53.596 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms  $\pm$  10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms  $\pm$  10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 06  
Frequency: \_\_\_\_\_ 54.4 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms  $\pm$  10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms  $\pm$  10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 323234 S/N: 10

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

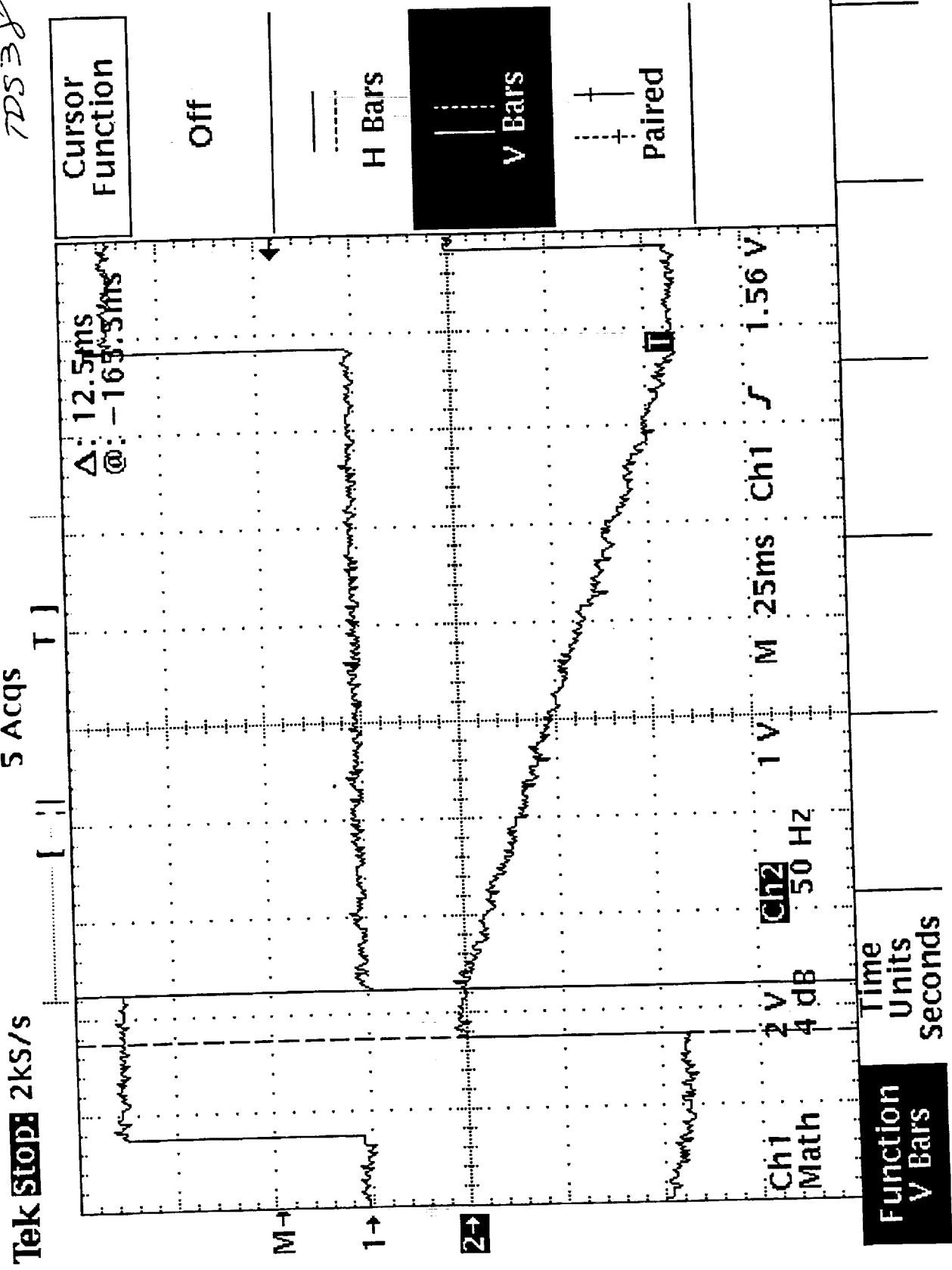
Date

Quality Control

Date



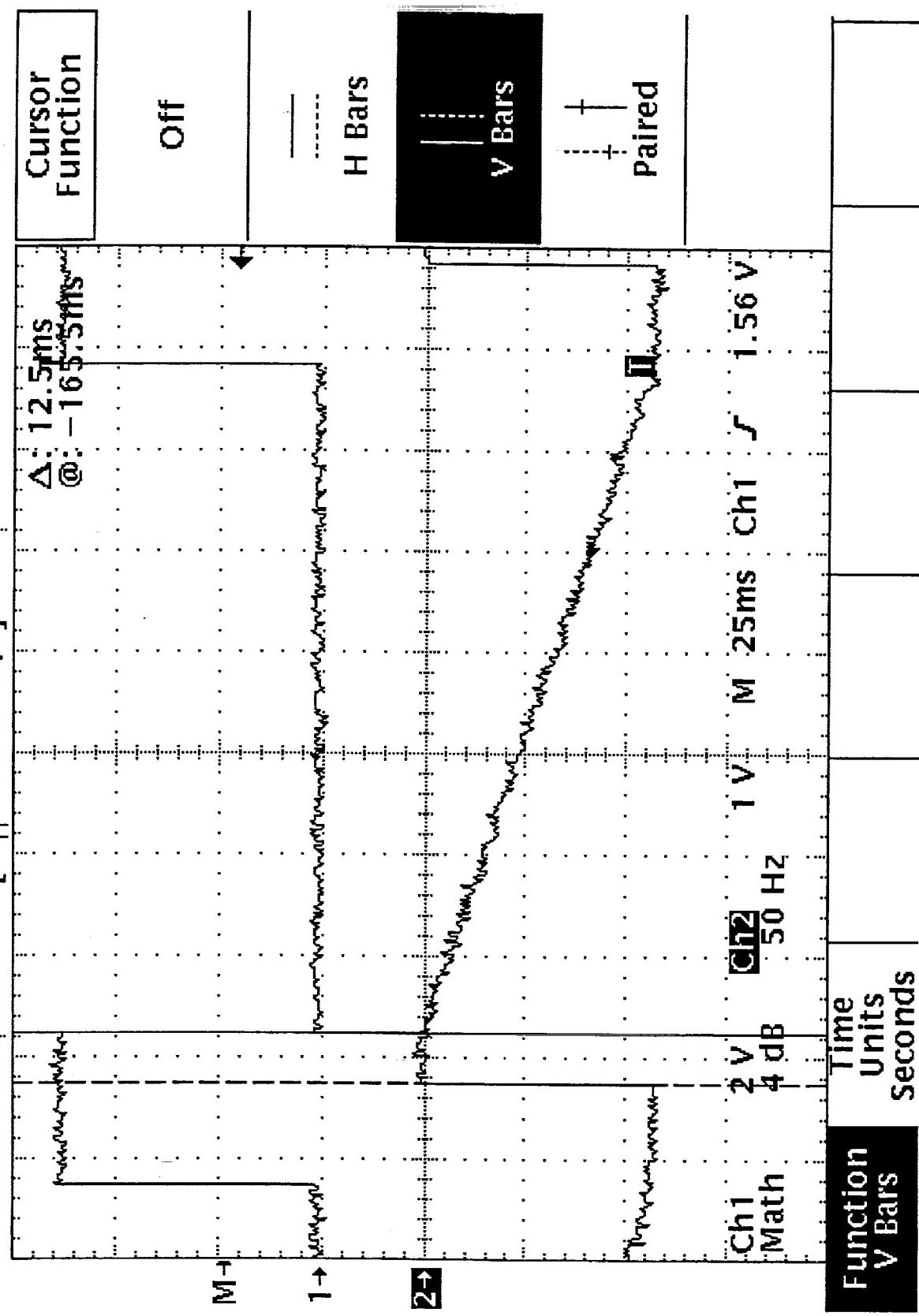
Ch 5  
TDS 38



Tek Run: 2kS/s

Trig'd

72) S 38  
Chn 6



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 39  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 07  
Frequency: 54.94 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 08  
Frequency: 55.5 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 101

R. Hart

3/16/99

Date

Customer Representative  
(Flight Hardware Only)



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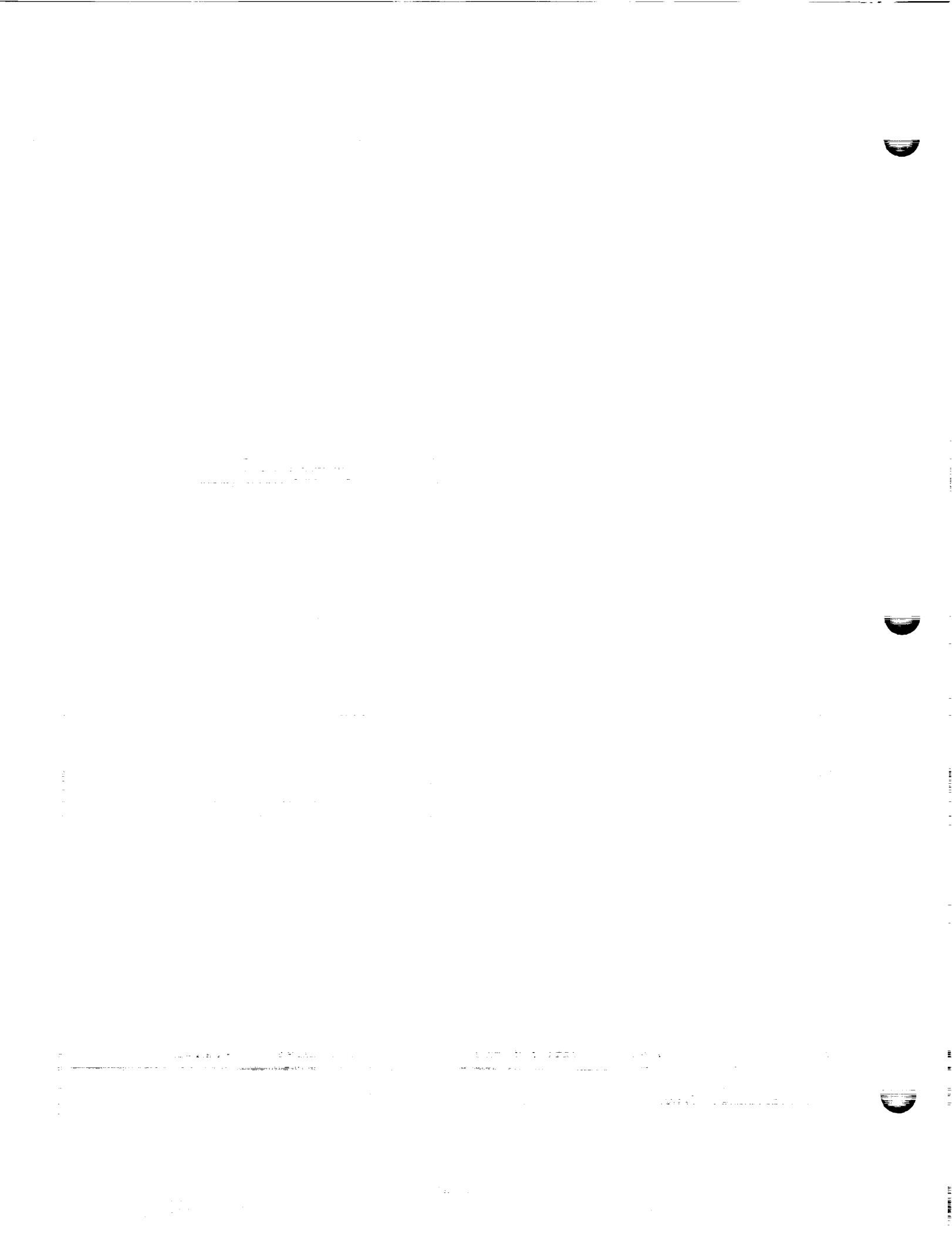
Date

Quality Control



3/16/99

Date



CH1/7

TDS39

Cursor Function

Off

H Bars

V Bars

Paired

Tek Stop: 2ks/s

15 Acqs

$\Delta: 12.5\text{ms}$

@: -16.5ms

M

1 →

2 →

Ch1 2V 1V M 25ms Ch1 50Hz

4dB

Function  
V Bars

Time Units  
Seconds

Ch2 2V 1V M 25ms Ch1 50Hz

4dB

Time Units  
Seconds

## Tek Run: 2ks/s Sample

Citharist

70539

### **Cursor Function**

三

H Bars

285

Paired

५६

CH2  
50 Hz

20

Math

Function	V Bars	Time Units	Seconds
----------	--------	------------	---------

Function  
V Bars

TEST DATA SHEET 40  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 09  
Frequency: \_\_\_\_\_ 57.2903 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms  $\pm$  10%  
Pass/Fail P

HOLD (B-D)\*  
Measured 25 ms  
Required 25 ms  $\pm$  10%  
Pass/Fail P

DUMP (D)\*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 10  
Frequency: \_\_\_\_\_ 57.2903 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms  $\pm$  10%  
Pass/Fail P

HOLD (B-D)\*  
Measured 25 ms  
Required 25 ms  $\pm$  10%  
Pass/Fail P

DUMP (D)\*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Hall 3/16/99

Test Systems Engineer

Date



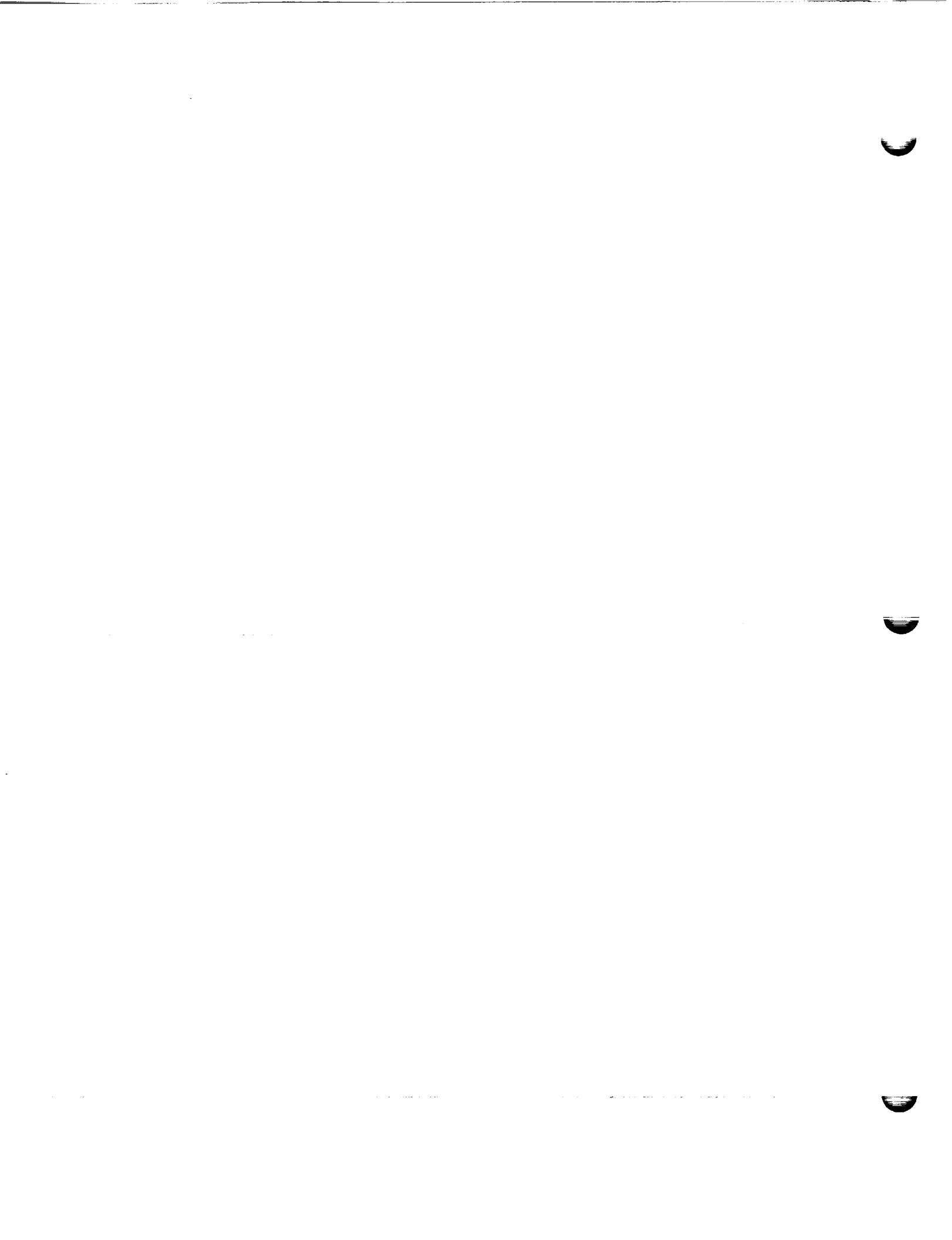
MAR 17 1999

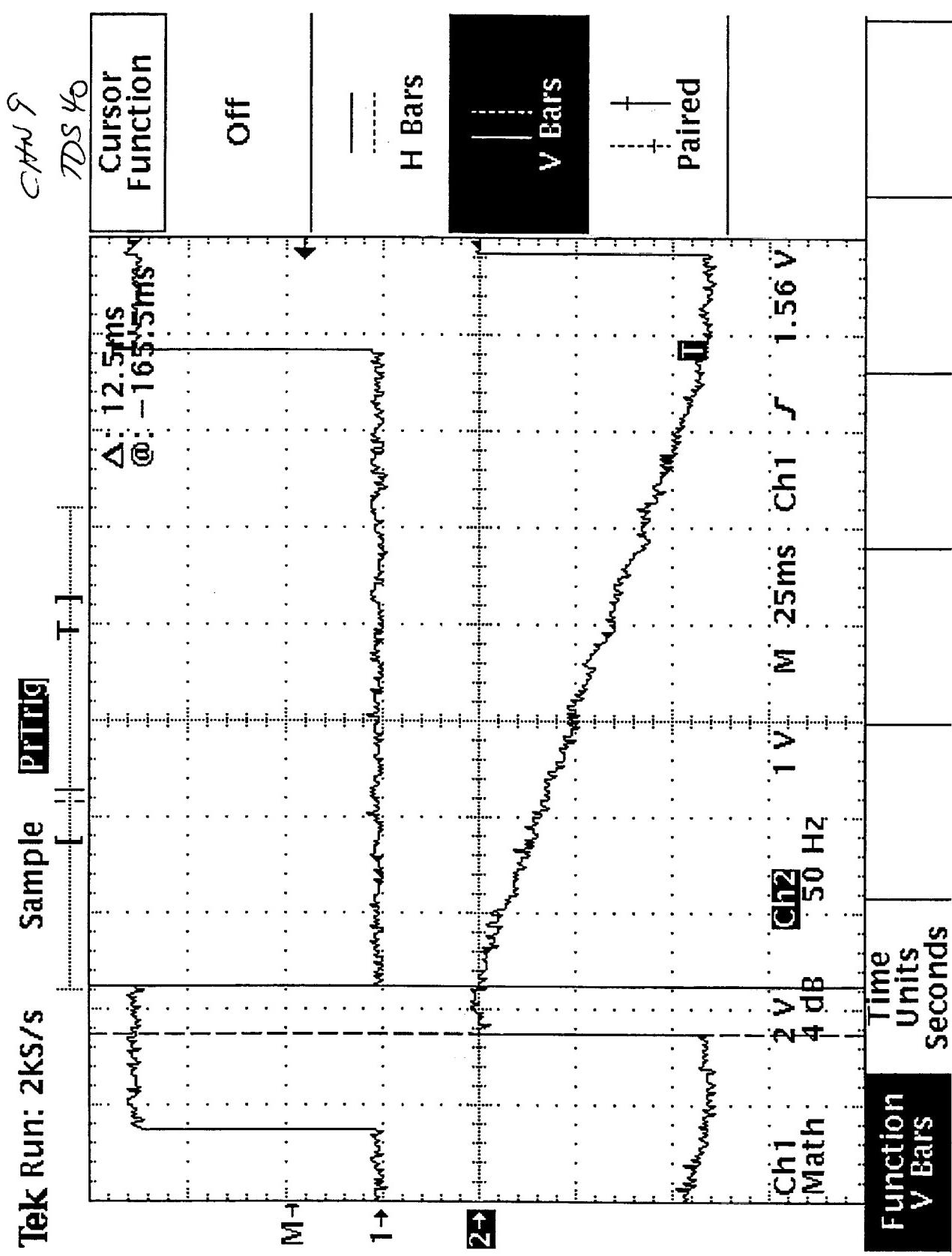
Date

Customer Representative  
(Flight Hardware Only)

Quality Control

Date





Tek Run: 2kS/s

CHAN 0

DIS 40

**Cursor Function**

Off

H Bars

V Bars

Paired

Pr[Trig]

Sample

M

1 →

2 →

T

Δ: 12.5ms  
@ -165.5ms

25ms

Ch1

1 V

M

50 Hz

4 dB

2 V

Math

1.56 V

Time Units  
Seconds

**Function**  
**V Bars**

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 41  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 11  
Frequency: 57.3903 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 12  
Frequency: 57.3903 GHz

INTEGRATION (X) \*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
R. Heil 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative  
(Flight Hardware Only)

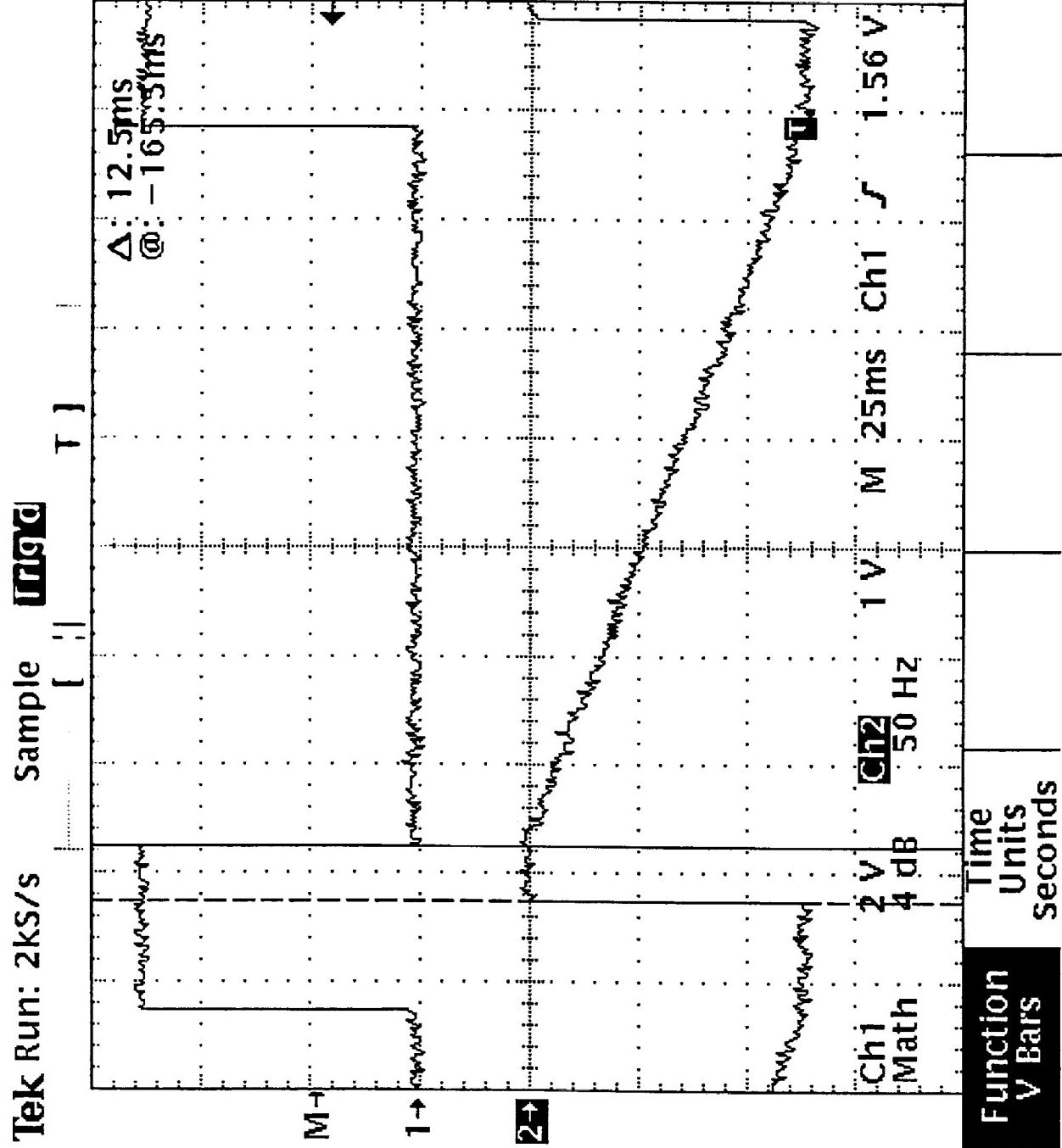
Date

Quality Control

Date



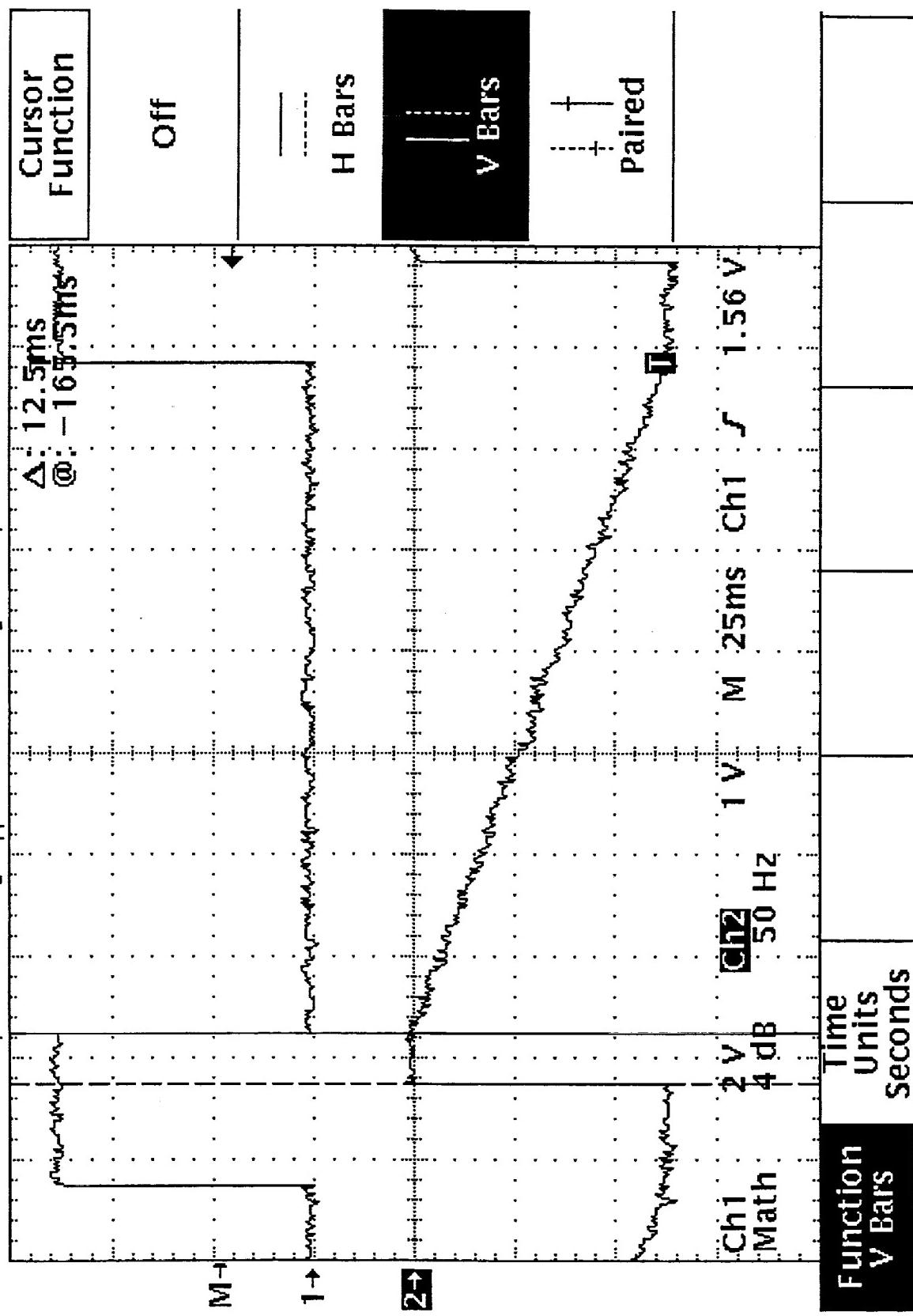
Ch1 //  
RDS 4/



Tek Stop: 2kS/s

64 Acqs

CHAN 12  
TDS 4/



TEST DATA SHEET 42  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 13  
Frequency: 57.3903 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 14  
Frequency: 57.3903 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Haik 3/16/99

Test Systems Engineer

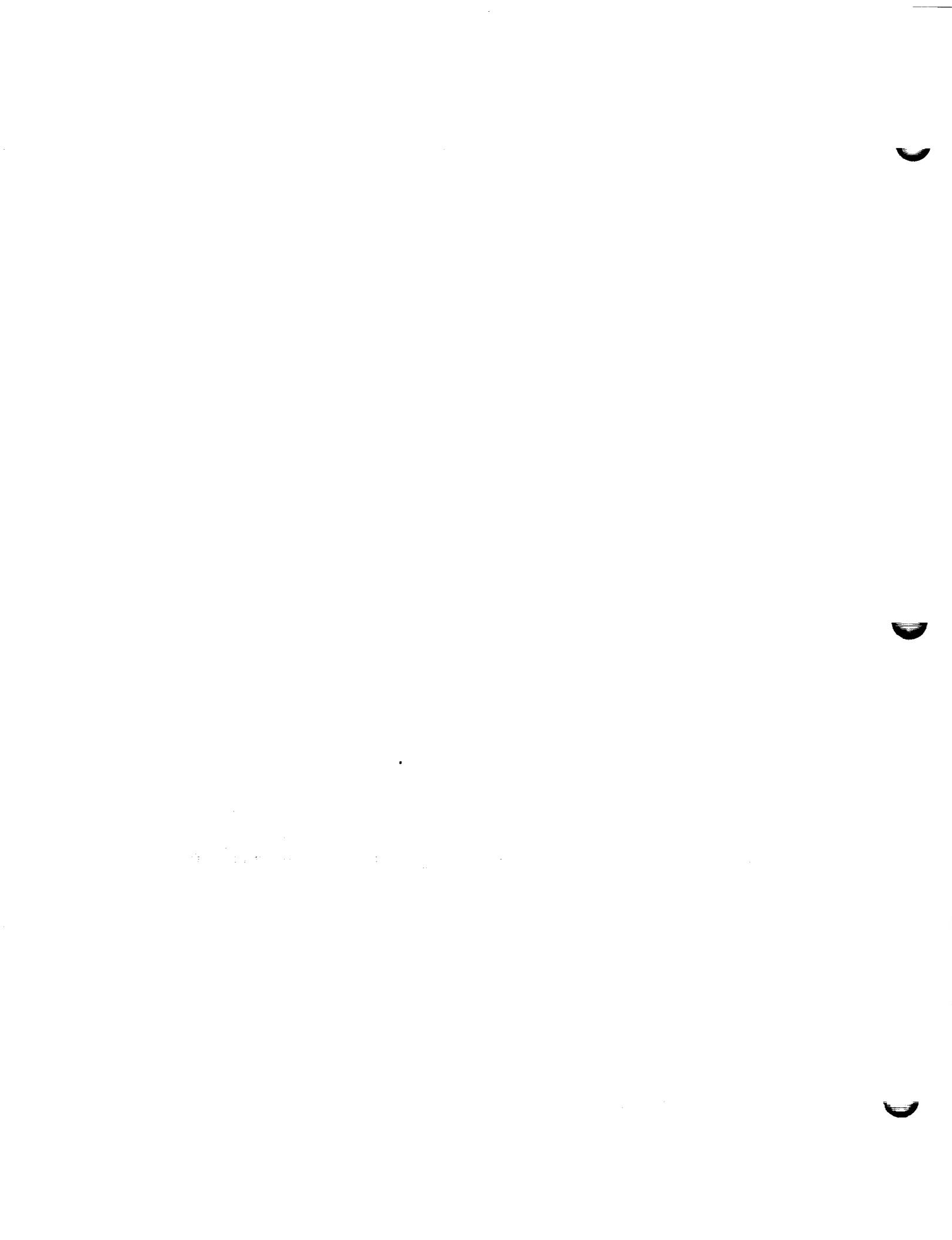
Date

Customer Representative  
(Flight Hardware Only)

Date

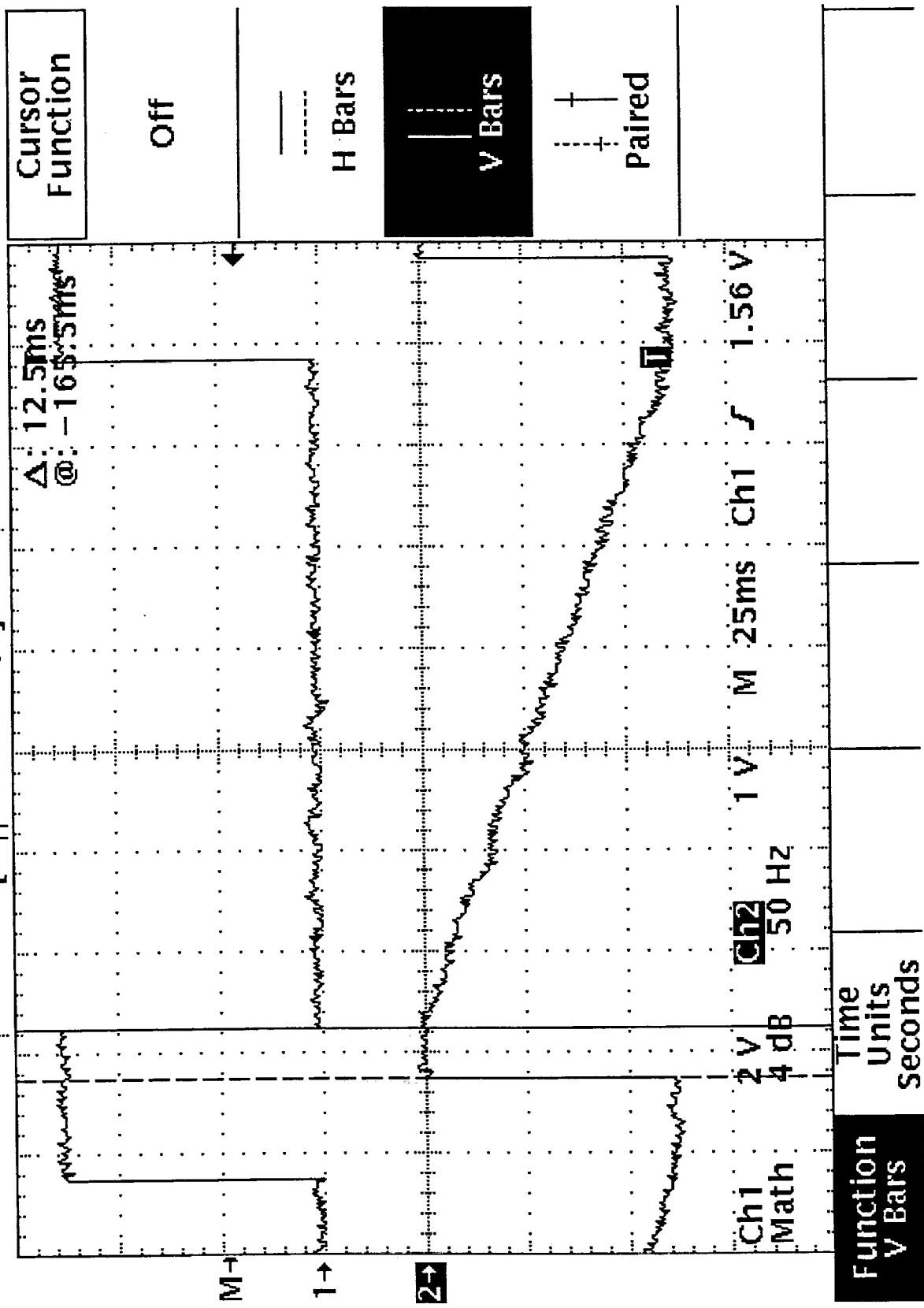
Quality Control

Date



Tek Run: 2ks/s Sample Trigger

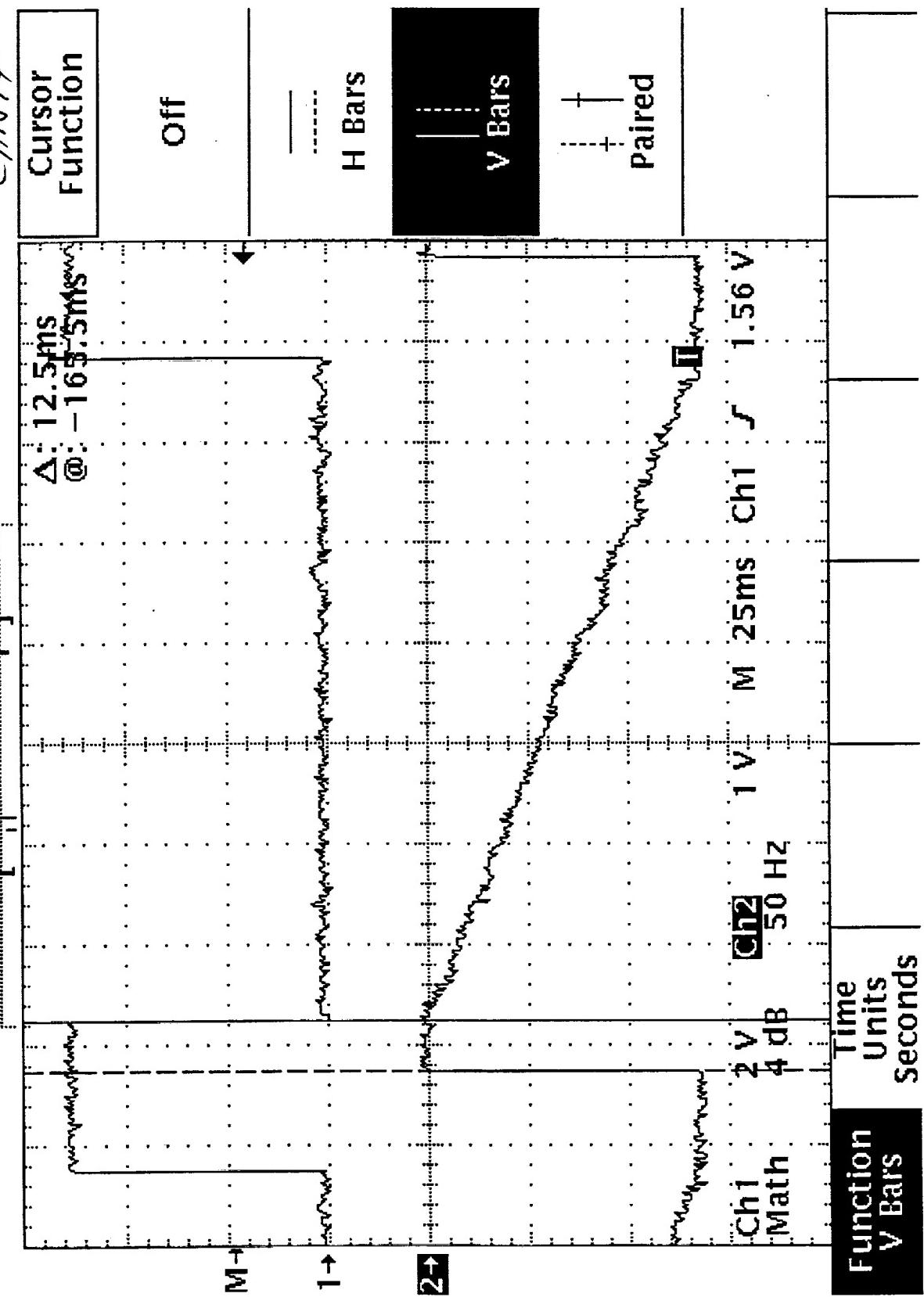
D542  
CH13



Tek Stop: 2kS/s

720S42  
CH1/4

5 Acqs



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 43  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 15  
Frequency: 89 GHz

INTEGRATION (X)\*  
Measured 165 ms  
Required 165 ms ± 10%  
Pass/Fail P

HOLD (B-D) \*  
Measured 25 ms  
Required 25 ms ± 10%  
Pass/Fail P

DUMP (D) \*  
Measured 12.5 ms  
Required 9 ms to 15 ms  
Pass/Fail P

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Hargrave 3/16/99

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)



MAR 17 1999

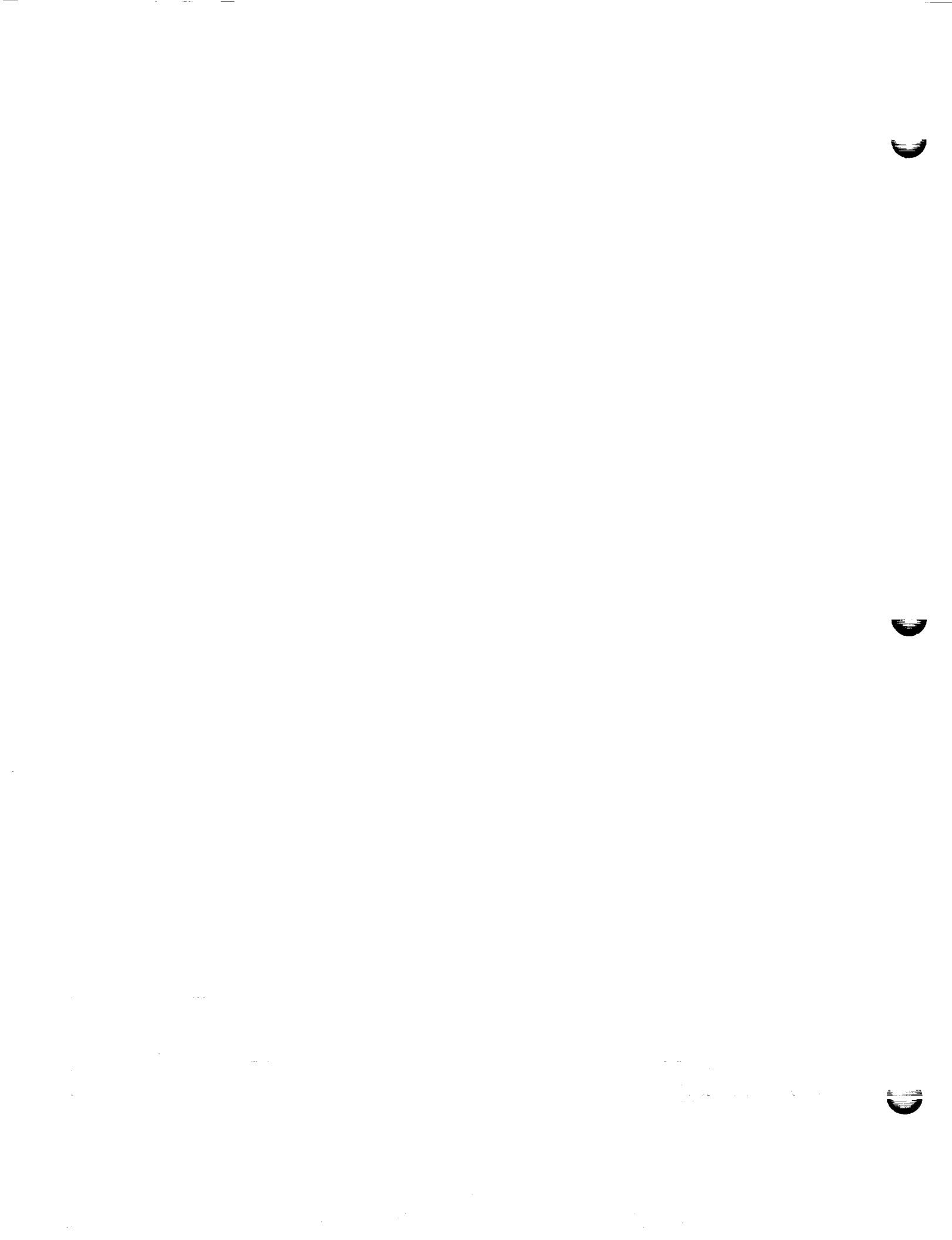
Date

Quality Control



3/16/99

Date



Tek Stop: 2kS/s

5 Acqs

DOS 4.3

C17A/15

Off

H Bars

Paired

Ch1



TEST DATA SHEET 44

PLLO No. 1 Verification (Paragraph 3.2.4.3.6.3)  
PLLO No. 2 Verification (Paragraph 3.2.4.3.6.4)

PLLO No. 1 dc Level 4.38V *R.Hair 3/16/99* PLLO NO. 1  
Required: \* Pass/Fail P

PLLO No. 2 dc Level 4.38V PLLO NO. 2  
Required: \* Pass/Fail P

\* -15 to +15 V dc level for S/N 101 - S/N 104,  $4.0 \pm 1.0$  V for S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105  
*R.Hair 3/16/99*

Test Systems Engineer

Date



MAR 17 1999

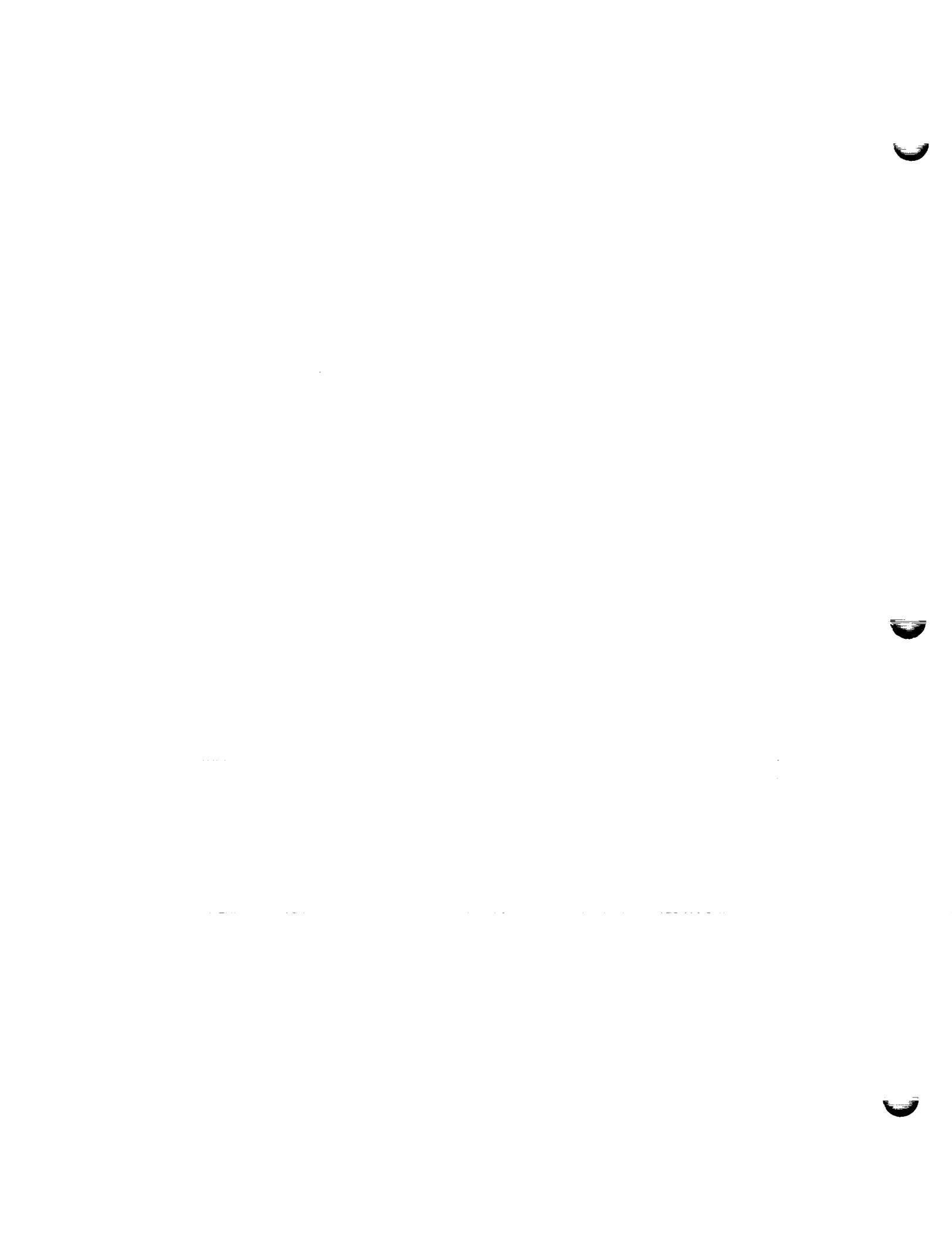
Date

Customer Representative  
(Flight Hardware Only)



Quality Control

Date



AMSU A1-17 A1 EXE:62 FULL SCAN MODE  
[ 5 ] DIGITAL A DATA ELEMENT 0000 P1 16-MAR-99 09:50:38 SCAN NUMBER 269  
[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

## ANALOG DATA 10 TO 27

10 ANTENNA DRIVE 15VDC 15.34 19 I.O. VOLTAGE CH 8  
11 SIGNAL PROCESSING -15VDC -15.00 20 I.O. VOLTAGE CH 7  
12 ANTENNA DRIVE -15VDC -14.75 21 I.O. VOLTAGE CH 6  
13 RECEIVER AMPLIFIER 8VDC 8.09 22 I.O. VOLTAGE CH 3  
14 SIGNAL PROCESSOR 5 VDC 5.07 23 I.O. VOLTAGE CH 4  
15 ANTENNA DRIVE 5 VDC 5.21 24 I.O. VOLTAGE CH 5  
16 RECEIVER MIXER/IF 10VDC 10.03 25 PLL #2 LOCK DETECT CH 5  
17 PHASE LOCK LOOP CH9/14 15VDC 14.99 26 PLL #1 LOCK DETECT CH 15  
18 PHASE LOCK LOOP CH9/14 -15VDC -14.85 27 I.O. VOLTAGE CH 15  
[ 21 ] UP [ 22 ] DOWN

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

TDS 44

AMSU A1-17 A1.EXE;62 FULL SCAN MODE P2 16-MAR-99 09:46:47 SCAN NUMBER 240  
[ 5 ] DIGITAL A DATA ELEMENT 0000

[ 6 ] DIGITAL B DATA ELEMENT 00  
[ 7 ] ANALOG DATA ELEMENT 00

## ANALOG DATA 10 TO 27

10 ANTENNA DRIVE 15VDC 15.25 19 L.O. VOLTAGE CH 8  
11 SIGNAL PROCESSING -15VDC -15.00 20 L.O. VOLTAGE CH 7  
12 ANTENNA DRIVE -15VDC -14.79 21 L.O. VOLTAGE CH 6  
13 RECEIVER AMPLIFIER 8VDC 8.08 22 L.O. VOLTAGE CH 3  
14 SIGNAL PROCESSOR 5 VDC 5.07 23 L.O. VOLTAGE CH 4  
15 ANTENNA DRIVE 5 VDC 5.20 24 L.O. VOLTAGE CH 5  
16 RECEIVER MIXER/IF 10VDC 10.03 25 PLLO #2 LOCK DETECT  
17 PHASE LOCK LOOP CH9/14 15VDC 14.99 26 PLLO #1 LOCK DETECT  
18 PHASE LOCK LOOP CH9/14 -15VDC -14.85 27 L.O. VOLTAGE CH15  
[ 21 ] UP [ 22 ] DOWN

POWER [ 4 ] ON SCREEN ONLY [ 2 ] PRINT [ 3 ] FULL [ 1 ] RETURN  
SELECT TOUCHSCREEN BUTTON 2

7DS 44

TEST DATA SHEET 49  
Receiver Input Signals (Paragraph 3.2.4.4.1)

CH 9 through 14 PLLO	PRT Temp (°C)		Measured * Frequency	Requirements **	Pass/ Fail
PLLO No. 1	PLO No. 1	Xtal *** Osc.			
	26.90°C		57.290334 GHz	57290.334 MHz ± 50 kHz	P
PLLO No. 2	PLO No. 2	Xtal *** Osc.		57290.334 MHz ± 50 kHz	P

\* Attach spectrum analyzer plots.

\*\* = At 18°C

\*\*\* PRT not connected on S/N 105 and above.

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: 373234      S/N: 105  
R. Hail 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Date

Customer Representative  
(Flight Hardware Only)

Quality Control



3/16/99

Date



PLD#/ TDS 49

MKR -83. 03dBm

CL 30.0 DB - 33.2 DB 10dB ✓

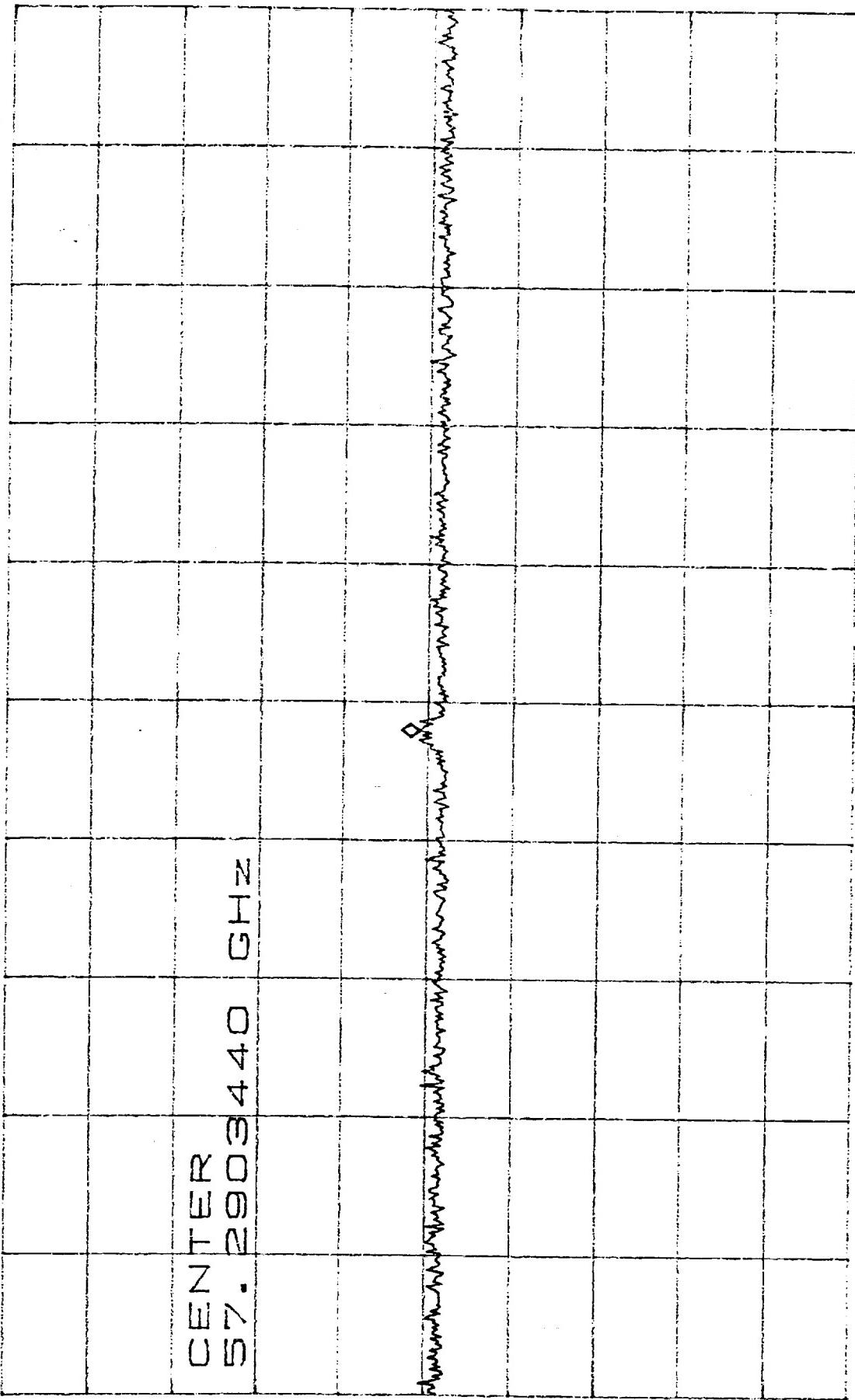
MKR	57-2803440	GHZ				
-83-0348m						

1

\* \* \* CENTER 57. 2903440GHZ  
\* RSW 10KHZ \* VSW 10KHZ

Plot 2

CL 30.0dB  
RL -33.2dBm 10dB/  
MKR -82.03dBm  
S7. 290340GHz



D

CENTER 57. 29034.40GHz  
RBW 10kHz \*VBW 10kHz  
SPAN 500. 0kHz  
\*SWP 1.00sec

TEST DATA SHEET 50 (Sheet 1 of 2)  
Radiometer "Relative" NEAT Verification\* (Paragraph 3.2.4.4.2.2)

Channels 3, 4, 5, 6, 7, 8, and 15. PLLO No. 1 (Channels 9 through 14)

Channel Number>	3	4	5	6
NEAT (Average of 5 data)	.231	.142	.154	.157
Pass/Fail	P	P	P	P
NEAT (Specified) K **	0.40	0.25	0.25	0.25
Channel Number>	7	8	9	10
NEAT (Average of 5 data)	.171	.172	.179	.213
Pass/Fail	P	P	P	P
NEAT (Specified) K **	0.25	0.25	0.25	0.40
Channel Number>	11	12	13	14
NEAT (Average of 5 data)	.235	.341	.450	.767
Pass/Fail	P	P	P	P
NEAT (Specified) K **	0.40	0.60	0.80	1.20
Channel Number>	15			
NEAT (Average of 5 data)	.176			
Pass/Fail	P			
NEAT (Specified) K **	0.50			

\* Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria

\*\* For reference only

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373274 S/N: 105  
R. Haig 3/16/99

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

MAR 17 1999

Date

Quality Control

Date



A1.EXE;62 FUNCTIONAL TEST RESULTS  
16-MAR-99

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.16	16193.0	13411.0	0.078	0.234
4	296.16	16636.0	13713.0	0.074	0.150
5	296.16	17016.0	14189.0	0.076	0.143
6	294.69	16794.0	14010.0	0.077	0.161
7	294.69	16345.0	13604.0	0.078	0.172
8	296.16	16343.0	13588.0	0.078	0.177
9	294.69	17469.0	14439.0	0.071	0.188
10	294.69	16843.0	13763.0	0.070	0.241
11	294.69	18659.0	15139.0	0.061	0.248
12	294.69	18560.0	15070.0	0.062	0.355
13	294.69	17987.0	14699.0	0.065	0.445
14	294.69	19919.0	16174.0	0.057	0.775
15	294.69	16769.0	15110.0	0.129	0.206

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]

TDS 50

10F2

PL OFF /

A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:35:37

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.15	16189.0	13401.0	0.078	0.221
4	296.15	16631.0	13701.0	0.074	0.145
5	296.15	17012.0	14180.0	0.076	0.146
6	294.68	16789.0	14012.0	0.077	0.152
7	294.68	16338.0	13604.0	0.079	0.204
8	296.15	16338.0	13577.0	0.078	0.164
9	294.68	17460.0	14437.0	0.071	0.189
10	294.68	16836.0	13764.0	0.070	0.204
11	294.68	18654.0	15143.0	0.061	0.231
12	294.68	18553.0	15072.0	0.062	0.347
13	294.68	17981.0	14700.0	0.065	0.430
14	294.68	19917.0	16173.0	0.057	0.736
15	294.68	16762.0	15109.0	0.130	0.178

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM  
SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]

A1 .EXE;62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:36:41

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.13	16184.0	13406.0	0.078	0.238
4	296.13	16626.0	13706.0	0.074	0.132
5	296.13	17008.0	14185.0	0.077	0.156
6	294.67	16786.0	14021.0	0.078	0.135
7	294.67	16333.0	13613.0	0.079	0.176
8	296.13	16333.0	13582.0	0.079	0.174
9	294.67	17452.0	14443.0	0.071	0.158
10	294.67	16829.0	13771.0	0.070	0.200
11	294.67	18648.0	15152.0	0.061	0.238
12	294.67	18545.0	15080.0	0.062	0.348
13	294.67	17975.0	14708.0	0.066	0.455
14	294.67	19911.0	16187.0	0.058	0.694
15	294.67	16757.0	15116.0	0.131	0.169

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]

A1.EXE;62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:37:45

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.12	16180.0	13426.0	0.078	0.209
4	296.12	16621.0	13730.0	0.075	0.135
5	296.12	17004.0	14206.0	0.077	0.155
6	294.66	16783.0	14021.0	0.078	0.167
7	294.66	16329.0	13613.0	0.079	0.140
8	294.66	16329.0	13607.0	0.079	0.178
9	294.66	17444.0	14440.0	0.071	0.187
10	294.66	16823.0	13770.0	0.070	0.216
11	294.66	18642.0	15151.0	0.061	0.230
12	294.66	18539.0	15079.0	0.062	0.339
13	294.66	17968.0	14707.0	0.066	0.474
14	294.66	19905.0	16185.0	0.058	0.883
15	294.66	16753.0	15114.0	0.131	0.148

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]

A1.EXE;62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

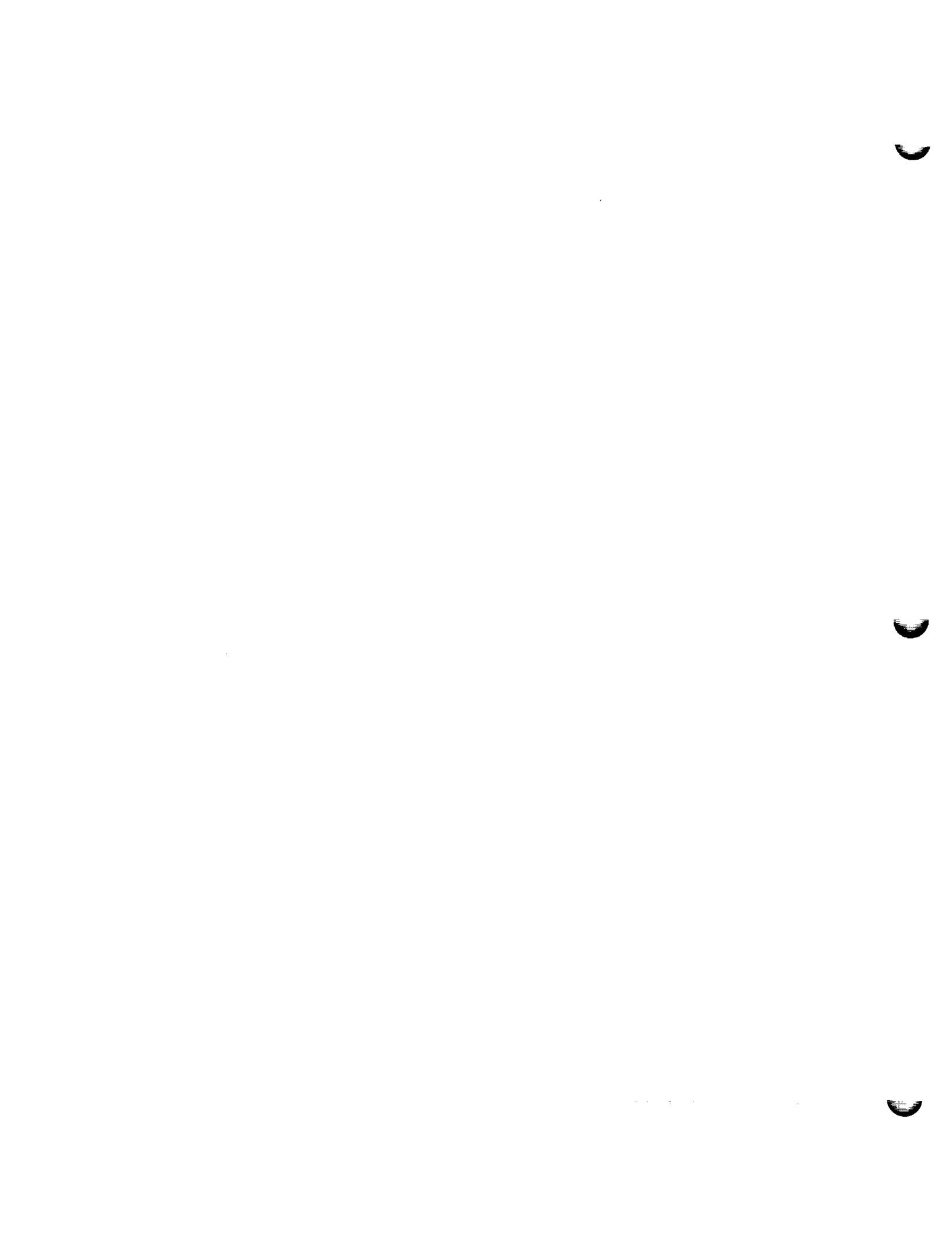
10:39:49

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	CALIN	DELTA T
3	296.11	16176.0	13422.0	0.078	0.255
4	296.11	16616.0	13726.0	0.075	0.150
5	296.11	17000.0	14203.0	0.077	0.174
6	294.65	16780.0	14024.0	0.078	0.173
7	294.65	16324.0	13614.0	0.079	0.167
8	296.11	16324.0	13604.0	0.079	0.169
9	294.65	17438.0	14441.0	0.072	0.174
10	294.65	16817.0	13772.0	0.070	0.207
11	294.65	18635.0	15152.0	0.062	0.252
12	294.65	18530.0	15080.0	0.062	0.317
13	294.65	17962.0	14708.0	0.066	0.448
14	294.65	19899.0	16188.0	0.058	0.745
15	294.65	16748.0	15114.0	0.131	0.182

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]



AE-26156/3B  
10 Mar 99

TEST DATA SHEET 50 (Sheet 2 of 2)  
Radiometer "Relative" NEAT Verification\* (Paragraph 3.2.4.4.2.2)

PLLO No. 2 (Channels 9 through 14)

Channel Number>	9	10	11	12
NEAT (Average of 5 data)	.171	.221	.229	.340
Pass/Fail	P	P	P	P
NEAT (Specified) K **	0.25	0.40	0.40	0.60
Channel Number>	13	14		
NEAT (Average of 5 data)	.469	.778		
Pass/Fail	P	P		
NEAT (Specified) K **	0.80	1.20		

\* Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria

\*\* For reference only

Circle Test:  CPT  LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 10

R. Haig 3/16/99  
Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

MAR 17 1999

Date

Quality Control

Date



A1 .EXE;62 FUNCTIONAL TEST RESULTS  
16-MAR-99

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.96	16143.0	13508.0	0.082	0.257
4	295.96	16574.0	13825.0	0.079	0.152
5	295.96	16966.0	14296.0	0.081	0.174
6	294.53	16752.0	14056.0	0.080	0.166
7	294.53	16265.0	13631.0	0.081	0.184
8	295.96	16286.0	13707.0	0.084	0.190
9	294.53	16864.0	14018.0	0.075	0.169
10	294.53	16379.0	13477.0	0.074	0.247
11	294.53	18210.0	14877.0	0.064	0.241
12	294.53	18192.0	14813.0	0.065	0.343
13	294.53	17572.0	14457.0	0.069	0.459
14	294.53	19456.0	15905.0	0.060	0.792
15	294.53	16711.0	15134.0	0.136	0.204

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN BUTTON 2 [ 5 ] PRINT DISTRIBUTION GRAPH

RETURN [ 1 ]

TDS 50

SHOOT 20F2

PL0#2

A1.EXE;62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:53:05

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.95	16141.0	13513.0	0.082	0.227
4	295.95	16571.0	13833.0	0.079	0.164
5	295.95	16964.0	14303.0	0.081	0.155
6	294.52	16750.0	14060.0	0.080	0.137
7	294.52	16264.0	13636.0	0.082	0.161
8	295.95	16283.0	13713.0	0.084	0.178
9	294.52	16859.0	14024.0	0.076	0.160
10	294.52	16376.0	13482.0	0.074	0.224
11	294.52	18204.0	14818.0	0.065	0.213
12	294.52	18113.0	14818.0	0.065	0.318
13	294.52	17567.0	14460.0	0.069	0.447
14	294.52	19453.0	15908.0	0.061	0.756
15	294.52	16709.0	15137.0	0.136	0.185

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]

A1. EXE; 62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:54:09

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.94	16139.0	13532.0	0.083	0.247
4	295.94	16569.0	13856.0	0.080	0.165
5	295.94	16962.0	14324.0	0.082	0.193
6	294.52	16749.0	14063.0	0.080	0.137
7	294.52	16264.0	13641.0	0.082	0.145
8	295.94	16281.0	13737.0	0.085	0.185
9	294.52	16856.0	14027.0	0.076	0.172
10	294.52	16374.0	13485.0	0.074	0.219
11	294.52	18200.0	14884.0	0.065	0.234
12	294.52	18107.0	14820.0	0.065	0.321
13	294.52	17562.0	14463.0	0.069	0.504
14	294.52	19444.0	15906.0	0.061	0.789
15	294.52	16707.0	15139.0	0.137	0.186

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH

RETURN [ 1 ]

A1.EXE;62 A1 FUNCTIONAL TEST RESULTS  
16-MAR-99

10:55:13

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.94	16135.0	13541.0	0.083	0.257
4	295.94	16566.0	13867.0	0.080	0.157
5	295.94	16960.0	14334.0	0.082	0.154
6	294.51	16748.0	14067.0	0.080	0.166
7	294.51	16263.0	13647.0	0.082	0.153
8	295.94	16278.0	13748.0	0.085	0.187
9	294.51	16853.0	14030.0	0.076	0.166
10	294.51	16370.0	13487.0	0.074	0.211
11	294.51	18192.0	14885.0	0.065	0.249
12	294.51	18102.0	14822.0	0.065	0.350
13	294.51	17555.0	14466.0	0.069	0.470
14	294.51	19436.0	15908.0	0.061	0.737
15	294.51	16705.0	15143.0	0.137	0.152

[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH

RETURN [ 1 ]

A1.EXE;62 A1 FUNCTIONAL TEST RESULTS

16-MAR-99

10:56:17

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.93	16134.0	13538.0	0.083	0.255
4	295.93	16563.0	13863.0	0.080	0.164
5	295.93	16958.0	14331.0	0.082	0.176
6	294.50	16746.0	14073.0	0.080	0.149
7	294.50	16262.0	13655.0	0.082	0.182
8	295.93	16276.0	13746.0	0.085	0.216
9	294.50	16851.0	14035.0	0.076	0.188
10	294.50	16367.0	13493.0	0.075	0.208
11	294.50	18187.0	14891.0	0.065	0.209
12	294.50	18095.0	14826.0	0.066	0.369
13	294.50	17551.0	14467.0	0.070	0.468
14	294.50	19431.0	15914.0	0.061	0.819
15	294.50	16703.0	15148.0	0.138	0.197

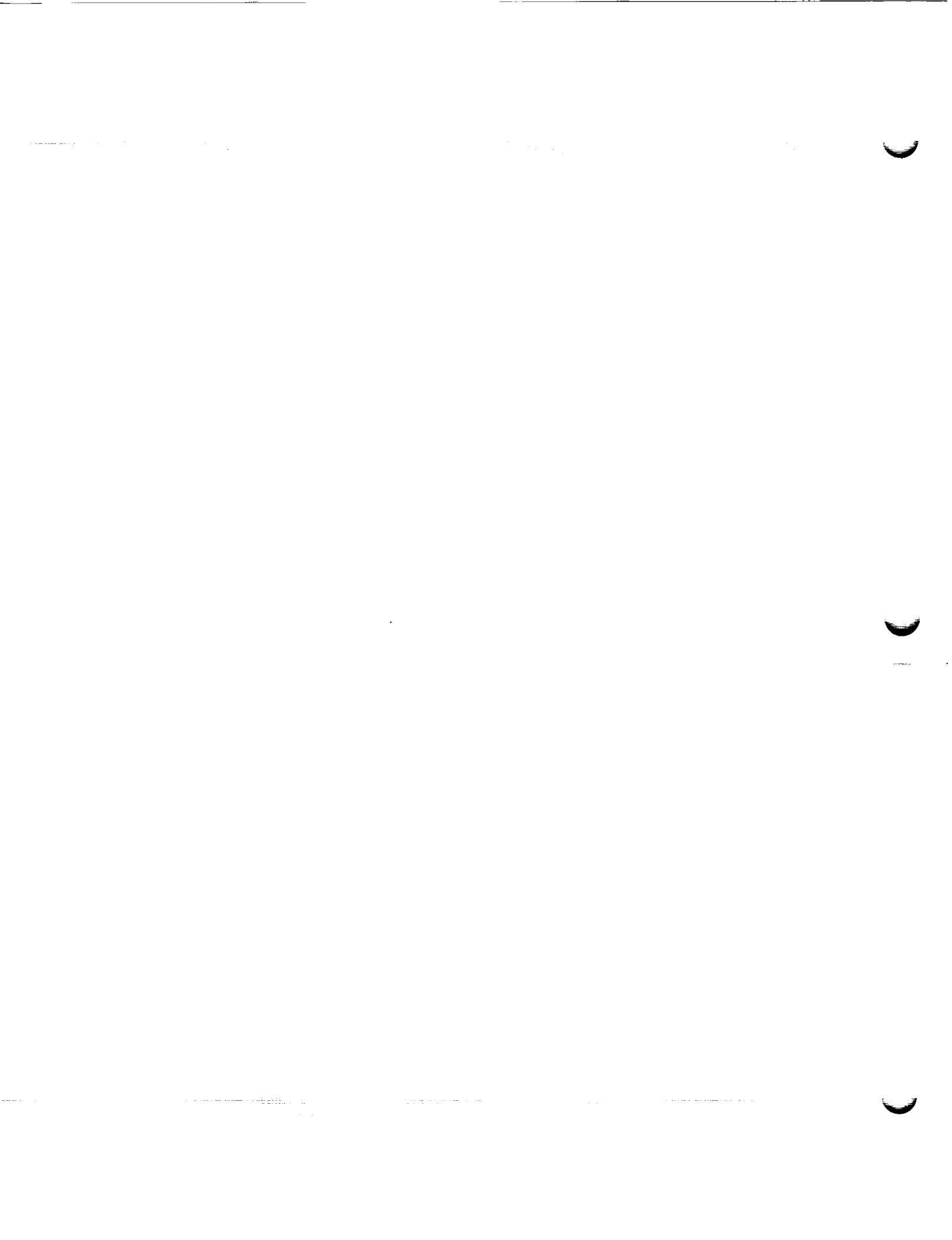
[ 2 ] PRINT SCREEN [ 3 ] PRINT RAW DATA [ 4 ] PRINT HISTOGRAM

SELECT TOUCHSCREEN [ 5 ] PRINT DISTRIBUTION GRAPH  
BUTTON 2

RETURN [ 1 ]



**SPECIAL TEST DATA**



TEST DATA SHEET 52 (Sheet 2 of 2)  
Instrument Feedback Tests (Paragraph 3.2.4.2.1.3, 3.2.4.2.2.8, 3.2.4.2.3.2, 3.2.4.2.4.2)

3.2.4.2.2.8: +28V Pulse Load Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.2.8.1	8	Load current ripple	<43 mA	Value: _____	

N/A  
AUG 6  
SET 1  
317-1

3.2.4.2.3.2: +28V Analog Telemetry Bus Instr. Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.3.2.1	7	Load current ripple	<0.29 mA	Value: .10mA	P

3.2.4.2.4.2: +10V Interface Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.4.2.1	7	Load current ripple	<1.0 mA	Value: .85mA	P

OPERATION 0850 - C  
- D

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: 373234 S/N: 105

AMSU  
B  
SEIT

3-17-99

Date

Test Systems Engineer

Dulcie Walla

3-17-99

Date

Customer Representative  
(Flight Hardware Only)

3-17-99

Date

Quality Control

3-17-99

Date



$X = 3.008.508$   $\Delta X = 503.9ms$   $\gamma = -911.71\mu$   $\Delta \gamma = 502.7\mu V$

CAP TIM BUF

-800  $\mu$

80.0  $\mu$   
/D i v

AC coupled  
Real  
2 mV/cm  
0.04-  
V

-1.44 m

0.0 3.24.2.3.2.1

+28V ATB & Sec Scan

SN: 105

PN: 1331720-2

OPERATOR: NO 57-17

Sec 8.0

Test Eng:

AMSU  
SELY

Date: 3-17-99

2093

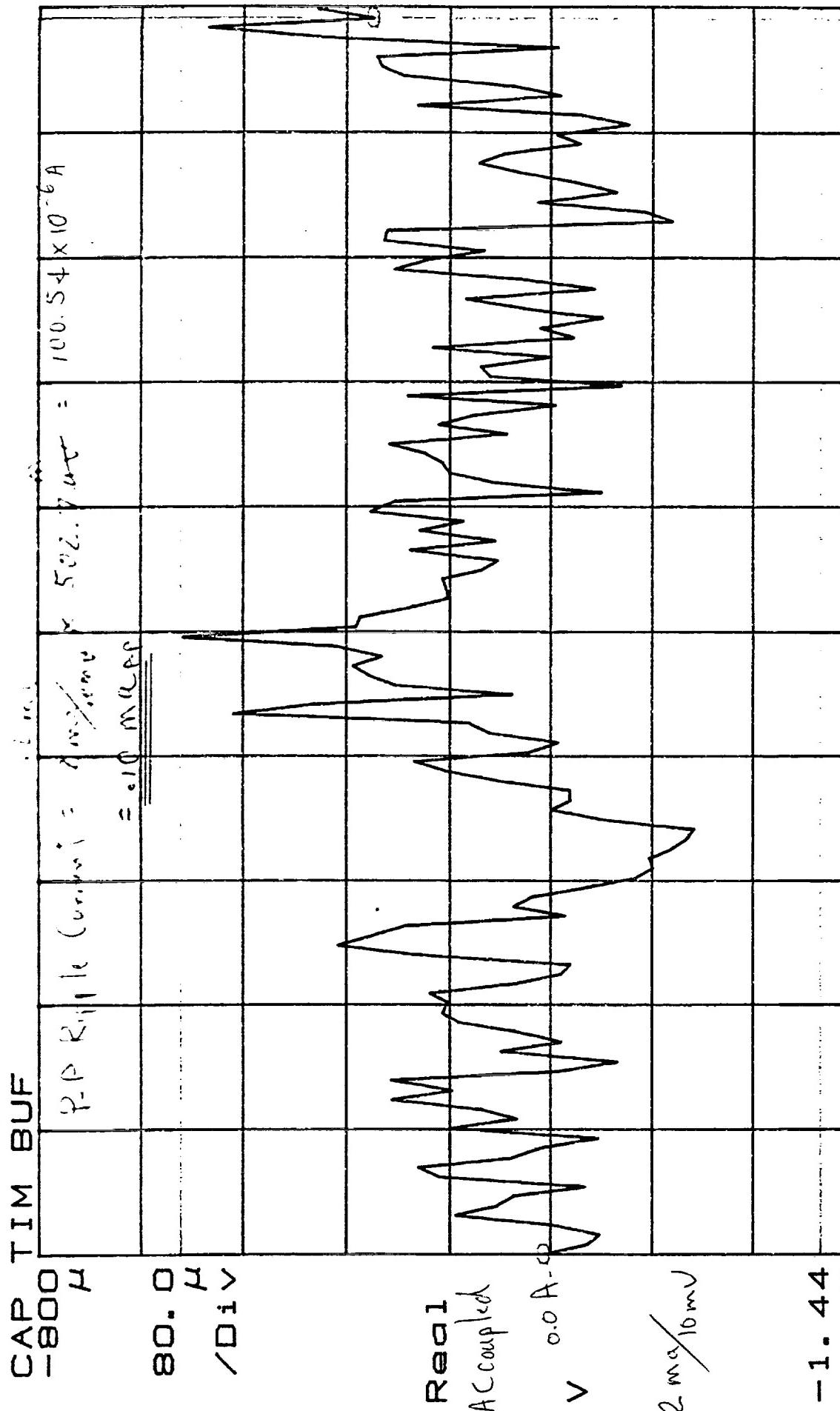
Gullio Waffer

Quality:

3-17-99

$X = 3.008 \mu$   $\Delta X = 500 \mu$   $Y = -911 \mu$   $\Delta Y = 502 \mu$   $V_{DD} = 34 \mu V$

### CAP TIM BUF



Fixd X 2.76 3.2.4, 2.3.2.1  
S/N: 105 TDS-52

S/N: 373234

S/N: 13311720-2

Sec

+2BV AT B Ripple Current

TDS-52

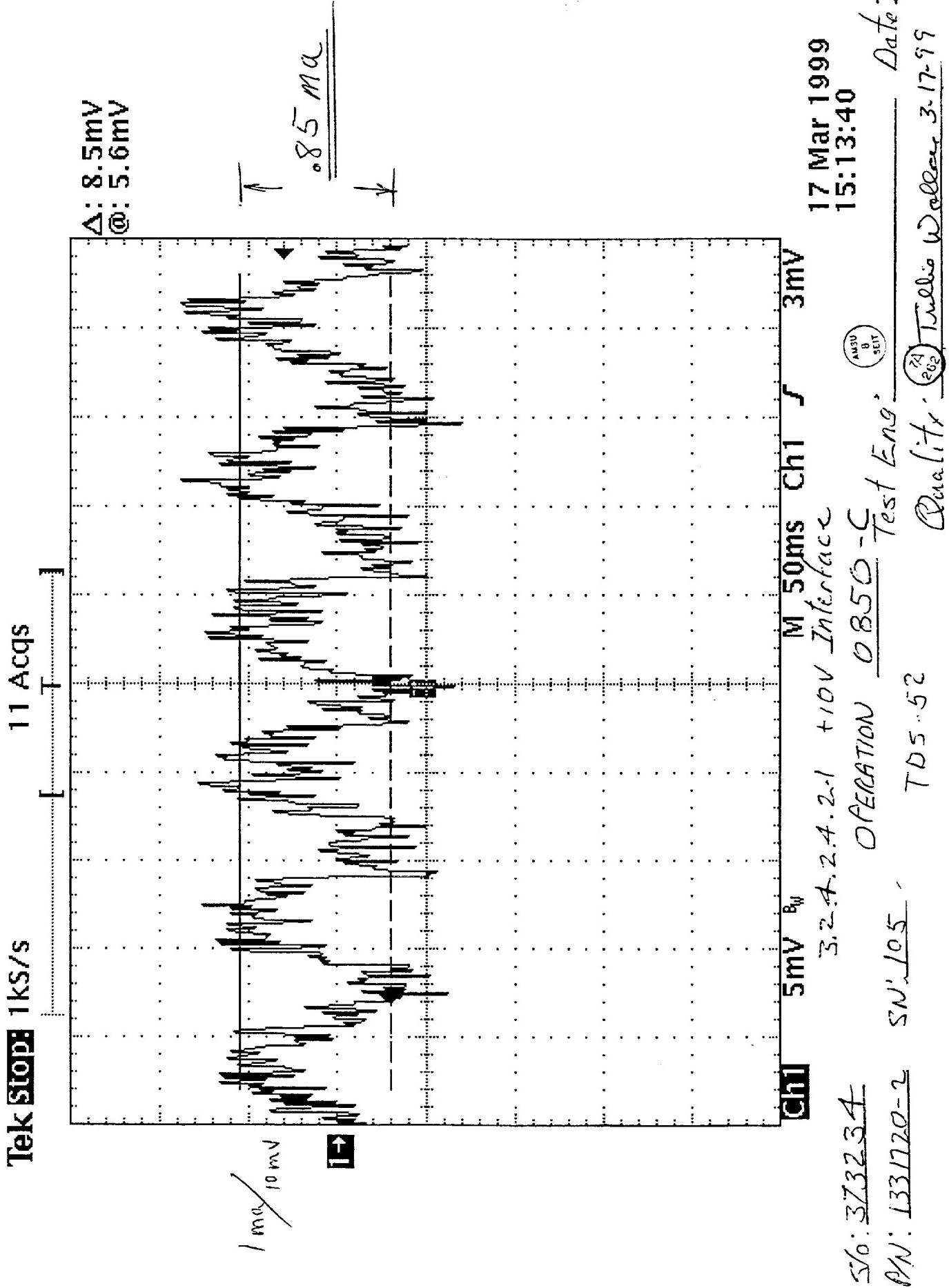
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SET

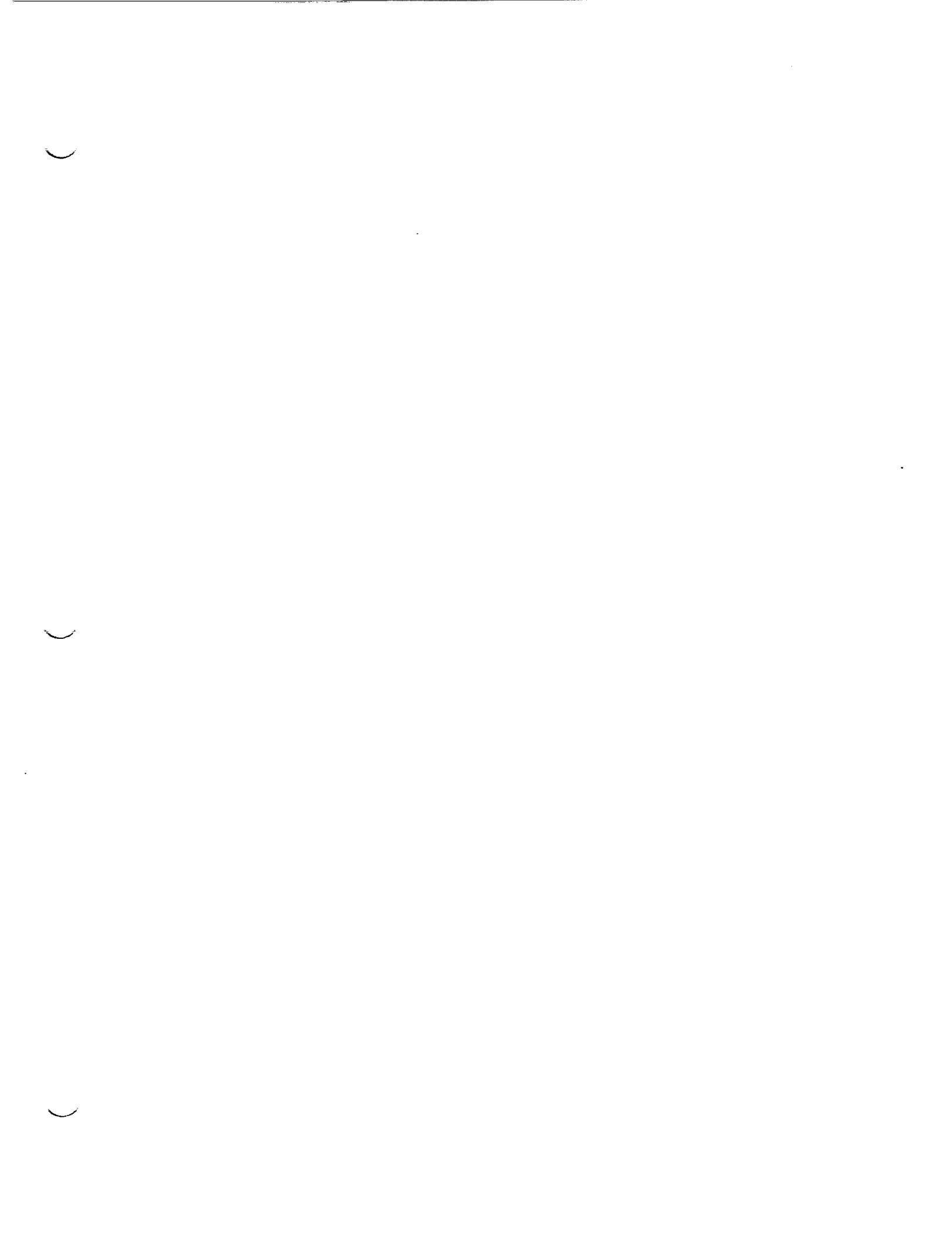
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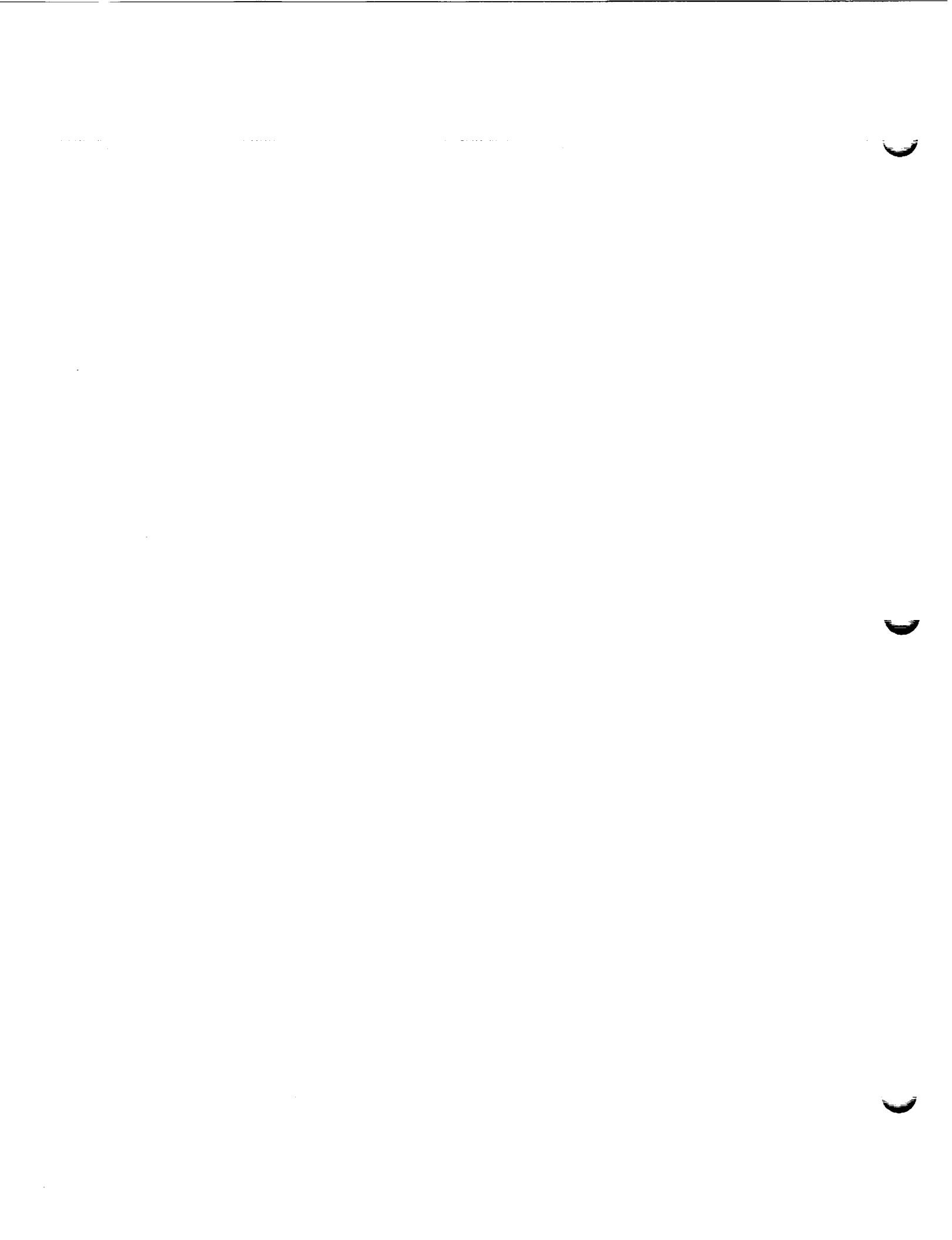
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**Electronic Systems Plant**

P.O. Box 296

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CAGE/Facility Ident: 70143

**GENCORP**  
**AEROJET**

**AE-26156/3B**  
**10 March 1999**

Superseding  
AE-26156/3A  
28 July 1998

**PROCESS SPECIFICATION**

**METSAT/KLM/AMSU-A1, SYSTEM COMPREHENSIVE  
AND LIMITED PERFORMANCE TESTS  
TEST PROCEDURE**

Contract No.: NAS5-32314

Prepared for:

**NASA/Goddard Space Flight Center  
Greenbelt Road  
Greenbelt, MD 20771**

Master Redline

Sb 373234

1331720-2-TST

0162 0850

ECN # CAMSU 2091

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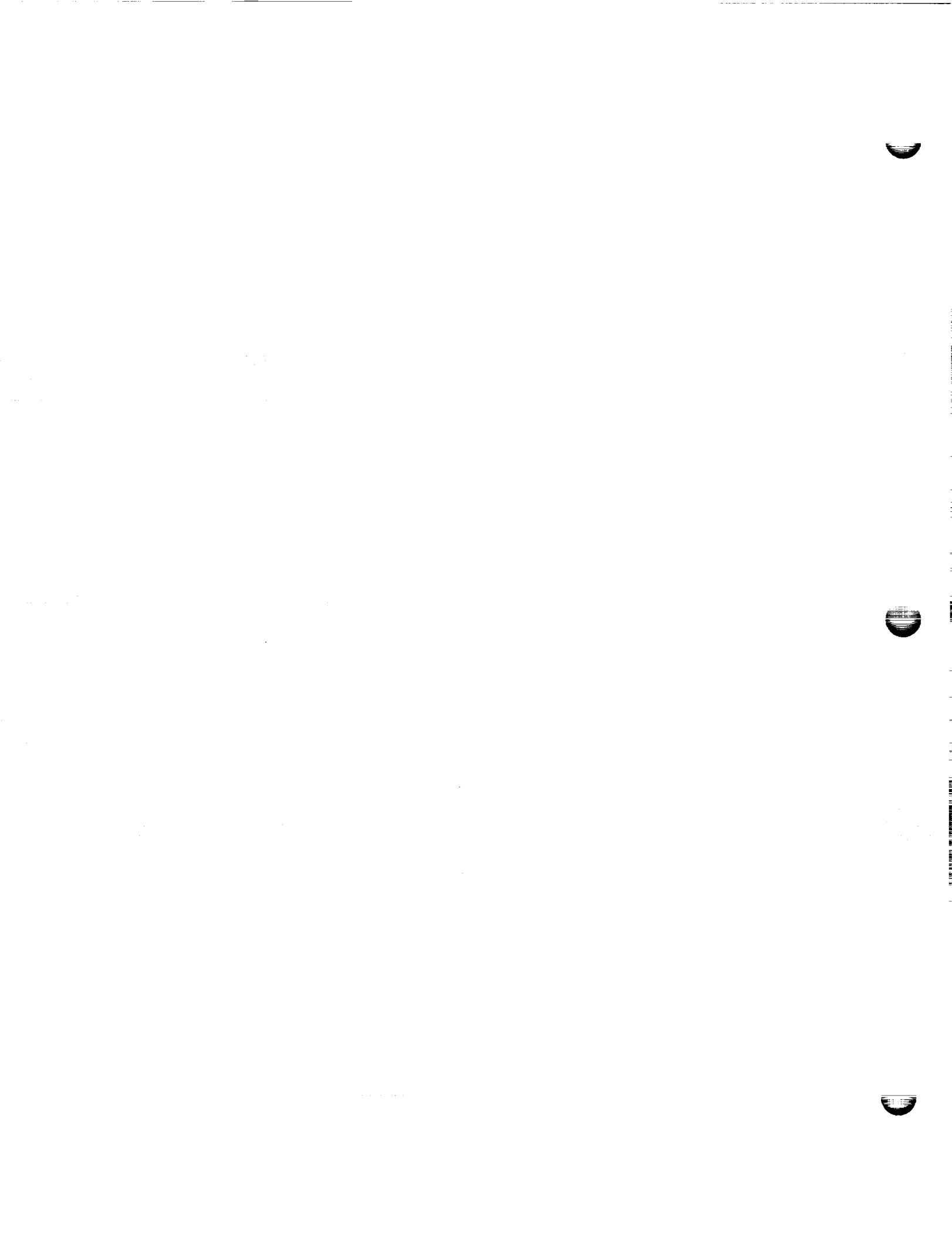
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## 1. SCOPE

**1.1 Scope.** This specification establishes the requirements for the Comprehensive Performance Test (CPT) and Limited Performance Test (LPT) of the Advanced Microwave Sounding Unit-A1 (AMSU-A1), referred to herein as the unit. The unit is defined on Drawing 1331720.

**1.2 Test procedure sequence.** The sequence in which the several phases of this test procedure shall take place is shown in Figure 1, but the sequence can be in any order.

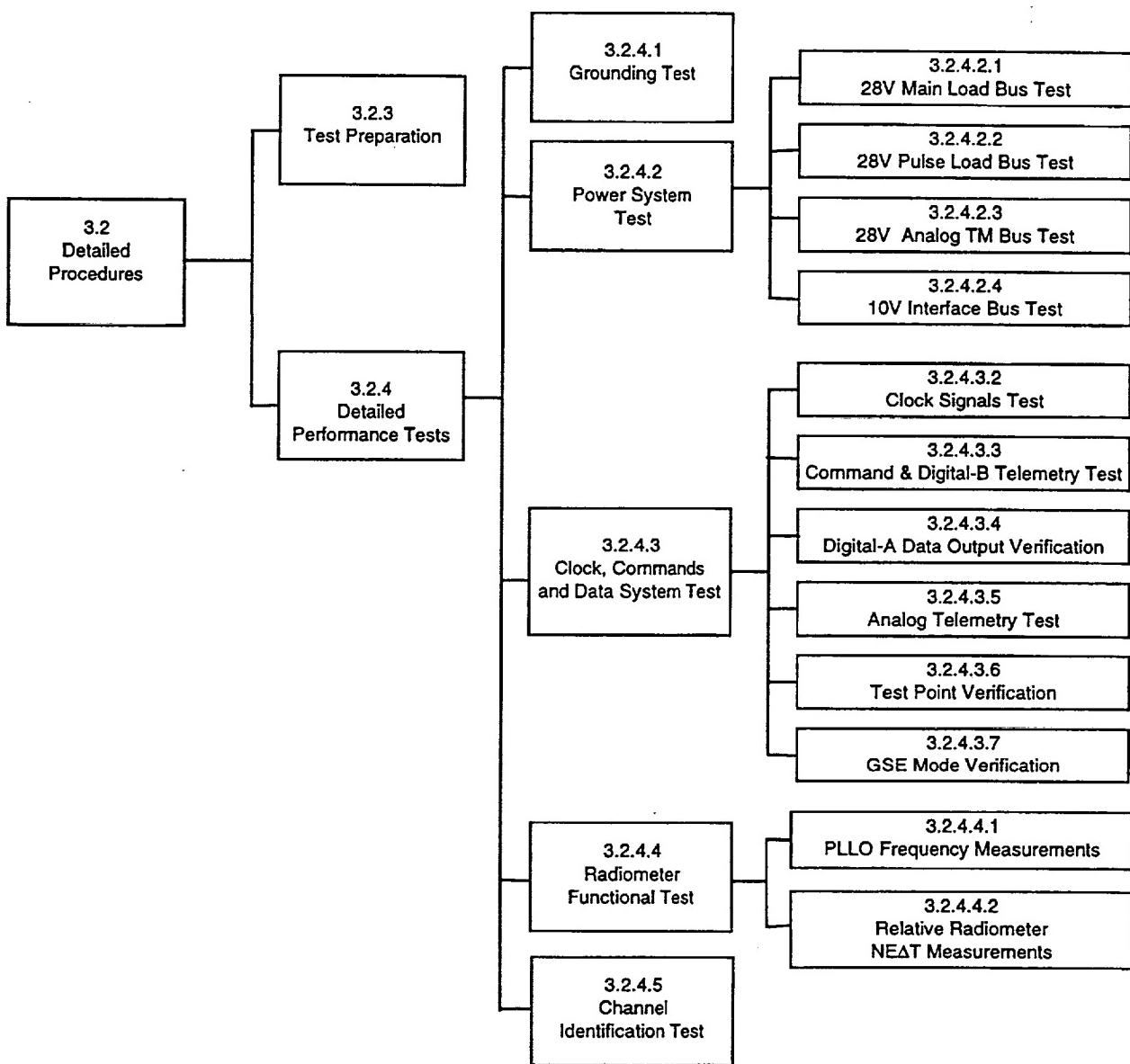


Figure 1. Test Procedure Sequence

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## 2. APPLICABLE DOCUMENTS

**2.1 Government documents.** The following documents form a part of this specification to the extent specified. Unless otherwise specified, the issue shown shall apply.

### STANDARDS

#### Military

MIL-STD-45662	Calibration Systems Requirements
---------------	----------------------------------

### OTHER DOCUMENTS

S-480-79	Performance Assurance Requirements for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (PAR)
S-480-80	Performance and Operation Specification for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (POS)
IS-2617547	AMSU-A1 Unique Instrument Interface Specification (UIIS)
IS-3267415	ATN-KLM General Instrument Interface Specification (GIIS)

(Copies of government documents should be obtained as indicated in the Department of Defense Index of Specification and Standards.)

**2.2 Non-Government documents.** The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issue in effect on the date of testing shall apply.

#### 2.2.1 Aerojet documents

### SPECIFICATION

AE-26002/1	Test Procedure, Subsystem, Antenna Drive for AMSU-A1
AE-26157	Special Test Equipment (STE), Operation and Maintenance Manual
AE-26357	Transportation Handling Procedure for the AMSU-A System Integrated Program

### STANDARD

STD-2454	Requirements for Electrostatic Discharge Control
----------	--

### REPORT

10353	Contamination Control Plan for the Advanced Microwave Sounding Unit-A (AMSU-A)
-------	--

AE-26156/3B  
10 Mar 99

DRAWINGS

1331720	Advanced Microwave Sounding Unit A1 (AMSU-A1)
1335695	Special Test Equipment
1356655	Console Assembly, METSAT and EOS STE

(Copies of Aerojet documents may be obtained from Gencorp Aerojet, Azusa Operations, CAGE 70143, P.O. Box 296, Azusa, California, 91702-0296).

### 3. REQUIREMENTS

#### 3.1 General test requirements

**3.1.1 Equipment and test facilities.** The tests described herein shall be performed at Aerojet under laboratory conditions in an EMI shielded chamber for the first and final CPT. Other tests need not be accomplished in the EMI shielded chamber. The test equipment listed in Table I shall be used when performing the tests. If the specified equipment is not available, the equipment substituted shall provide a measurement accuracy equal to or greater than that of the specified equipment. The AMSU-A Special Test Equipment (STE) shall be used for activation and control of the unit and monitoring of its performance.

Table I. Equipment List

Item	Quantity	Item Description	Mfg.	Model
1	1	Dynamic signal analyzer	Hewlett-Packard	3562A
2	1	Signal Generator	Hewlett-Packard	3314A
3	1	Oscilloscope	Tektronix	2225A
4	1	9-pin breakout box	Aerojet	2536-3743/SK1358702-1
5	1	15-pin breakout box	Aerojet	2536-3744/SK1358703-1
6	2	25-pin breakout box	Aerojet	2336-3746/SK1358704-1
7	1	37-pin breakout box	Aerojet	2536-3745/SK1358705-1
8	1	Relay Board	Aerojet	-
9	1	Double Shielded Connector	-	-
10	1	Lab. General Purpose Power Supply	Hewlett-Packard	6114
11	1	Oscilloscope	Tektronix	466A
12	1	Power Supply	Power Designs	3650-S
13	1	WR19 Harmonic Mixer (40-60 GHz)	Hewlett-Packard	HP11970V
14	1	Power Meter	Anritsu	ML83A
15	1	WR19 Feed Horn	TRG	V861
16	1	LN2 Container	Cole	N03726-20
17	1	Spectrum Analyzer	Hewlett-Packard	8566B
18	1	STE Computer	Aerojet	1336695
19	1	STE Interface Cable J1	Aerojet	1335758-1
20	1	STE Interface Cable J2	Aerojet	1335752-1
21	1	STE Interface Cable J3	Aerojet	1335756-1
22	1	STE Interface Cable J4	Aerojet	1335755-1
23	1	STE Interface Cable J5	Aerojet	1335753-1
24	1	STE Interface Cable J6	Aerojet	1335754-1
25	1	STE Interface Cable J7	Aerojet	1335757-1
26	1	Oscilloscope Camera	Tektronix	-
27	1	Current Probe	Tektronix	AM503
28	1	Plotter	Hewlett-Packard	7475A
29	1	Frequency Counter	Hewlett-Packard	5316A
30	1	Multimeter (Digital volt-ohm meter)	Fluke	77

Table I. Equipment List (Continued)

Item	Quantity	Item Description	Mfg.	Model
31	1	Cold Target Stand A1-1	Aerojet	T-1291001-3
32	1	Cold Target Stand A1-2	Aerojet	T-1291001-2
33	2	Cold Target Support	Aerojet	T-1291000-1
34	1	Sweeper	Hewlett-Packard	83623A
35	1	Multiplier	Hewlett-Packard	83557A/83558A
36	1	Coupler/Detector	Hewlett-Packard	83557-60001
37	1	Spectrum Analyzer	Hewlett-Packard	8563E

**3.1.2 Required procedures and operations.** The unit shall be subjected to the examinations and tests specified in 3.2.4 and Table II.

**3.1.2.1 Limited performance test (LPT).** The Limited Performance Test shall consist of the test procedures specified in the LPT column of Table II.

**3.1.2.2 Comprehensive performance test (CPT).** Three versions of the Comprehensive Performance Test are identified in Table II. These are applicable for different test stages. The test procedures to be performed for each version are specified in the 1st CPT, Sub CPT, and Final CPT columns of Table II. See 3.1.1 for required location of the first and the final CPT.

**3.1.3 Inspection instructions.** The following shall apply to all inspections performed under this specification.

- a. **Personnel familiarization:** All personnel directly concerned with the conduct of the inspection shall become familiar with the entire content of this document before beginning the tests. Each step, including all notes, warnings, and cautions, shall be understood thoroughly before starting.
- b. **Referenced documents:** Performance of the tests specified herein may require reference to the documents listed in Section 2. It is recommended that the applicable issues of these documents be available at the time and place of testing.

**3.1.4 Test conditions.** The following paragraphs shall apply to all testing described in this document.

**3.1.4.1 Standard ambient conditions.** Unless otherwise specified in a detailed method paragraph, all handling shall be performed under the following laboratory ambient conditions.

- a. Handling in accordance with AE-26357
- b. Contamination control in accordance with Report 10353
- c. Temperature:  $+23 \pm 10^\circ\text{C}$
- d. Pressure: 610 to 810 torr
- e. Humidity:  $50 \pm 20\%$  (no condensation)
- f. The instrument shall be placed in its protective bag (1338427) when not in use.

Table II. AMSU-A1 Performance Tests

Paragraph	Test Description	1st CPT	LPT	Sub CPT	Final CPT
3.2.4.1	Grounding	X	X	X	X
3.2.4.2.1.1	+28 Main Load Bus (MLB) Turn-On Transient	X			X
3.2.4.2.1.2	+28 MLB Operating Power	X	Note 2	Note 3	X
3.2.4.2.1.3	Instrument Feedback Test	X			
3.2.4.2.1.4	Transient Susceptibility Test	X			
3.2.4.2.2	+28 Pulse Load Bus (PLB) Peak Current	X		Note 4	X
3.2.4.2.2.8	Instrument Feedback Test (PLB)	X			
3.2.4.2.2.9	Transient Susceptibility Test	X			
3.2.4.2.3	+28 Analog Telemetry Bus (ATB)	X		X	X
3.2.4.2.3.2	Instrument Feedback Test (ATB)	X			
3.2.4.2.3.3	Transient Susceptibility Test	X			
3.2.4.2.4	+10 V Interface Bus	X		X	X
3.2.4.2.4.2	Instrument Feedback Test	X			
3.2.4.2.5	Power Input Test for LPT		X		
3.2.4.3.2	Clock Signals	X			X
3.2.4.3.3	Commands and Digital-B Telemetry	X	X	X	X
3.2.4.3.4	Digital-A Data Output	X	Note 5	Note 5	X
3.2.4.3.5	Analog Telemetry	X	Note 6	Note 6	X
3.2.4.3.6	Test Points	X		X	X
3.2.4.3.7	GSE Mode	X Note 7			
3.2.4.4	Radiometer Functional				Title
3.2.4.4.1	PLLO Frequency Measurement	X			X
3.2.4.4.2.2	Relative NE $\Delta$ T	X	X	X	X
3.2.4.5	Channel Identification Test	X			

Notes:

1. Test Data Sheets for CPT/LPT located in Appendix A.
2. 3.2.4.2.5 (Power input test for LPT).
3. At 28 V only.
4. 3.2.4.2.2 except 3.2.4.2.2.6.
5. Only full scan.
6. STE only.
7. GSE mode test/verification is not required and is for engineering use only.

**3.1.4.2 Test tolerances.** The tolerances allowed on test conditions are intended only to provide for accuracy of such items as instrumentation and controls. Conditions shall be as close as possible to the nominal or center values specified, and in no instance shall they exceed the tolerances specified. Unless otherwise specified, the tolerances shall be within  $\pm 10\%$ .

**3.1.4.3 Read-out accuracy.** Parameters are specified either as limits or as nominal values with plus-or-minus tolerances. These limits and tolerances shall be regarded as absolute, and the inaccuracies of measuring equipment shall not be interpreted as part of measured values in such a way that out-of-limit measurements may appear in-limit.

**3.1.5 Electrostatic Sensitive Device (ESD) handling.** All electronic hardware shall be handled in accordance with Aerojet Standard STD-2454.

### **3.2 Detailed Procedures**

**3.2.1 Responsibility for inspection.** All tests specified herein shall be performed under the cognizance of Aerojet Quality Assurance.

**3.2.2 Monitoring procedures for equipment.** Test equipment calibration schedules and procedures shall comply with the requirements of ML-STD-45662. Before performing examinations and tests in accordance with this procedure, all test equipment to be used shall be verified as being within their current calibration period. Calibration or alignment, necessary for operation of the equipment within the requirements of this document, shall be performed when required.

#### **3.2.3 Test preparation**

**3.2.3.1 STE connection.** The power sources, signal sources, and loads are provided to the unit under test by the AMSU-A Special Test Equipment (STE) (Drawing 1335695 or 1356655), in accordance with paragraph 5.2 of S-480-80. The STE is automated test equipment controlled by a MicroVax computer. The unit shall be connected to the STE in accordance with AE-26157 and the detailed test procedures in 3.2.4.

**3.2.3.2 Signal sources.** Signal sources required during the performance test but not provided by the STE are as follows:

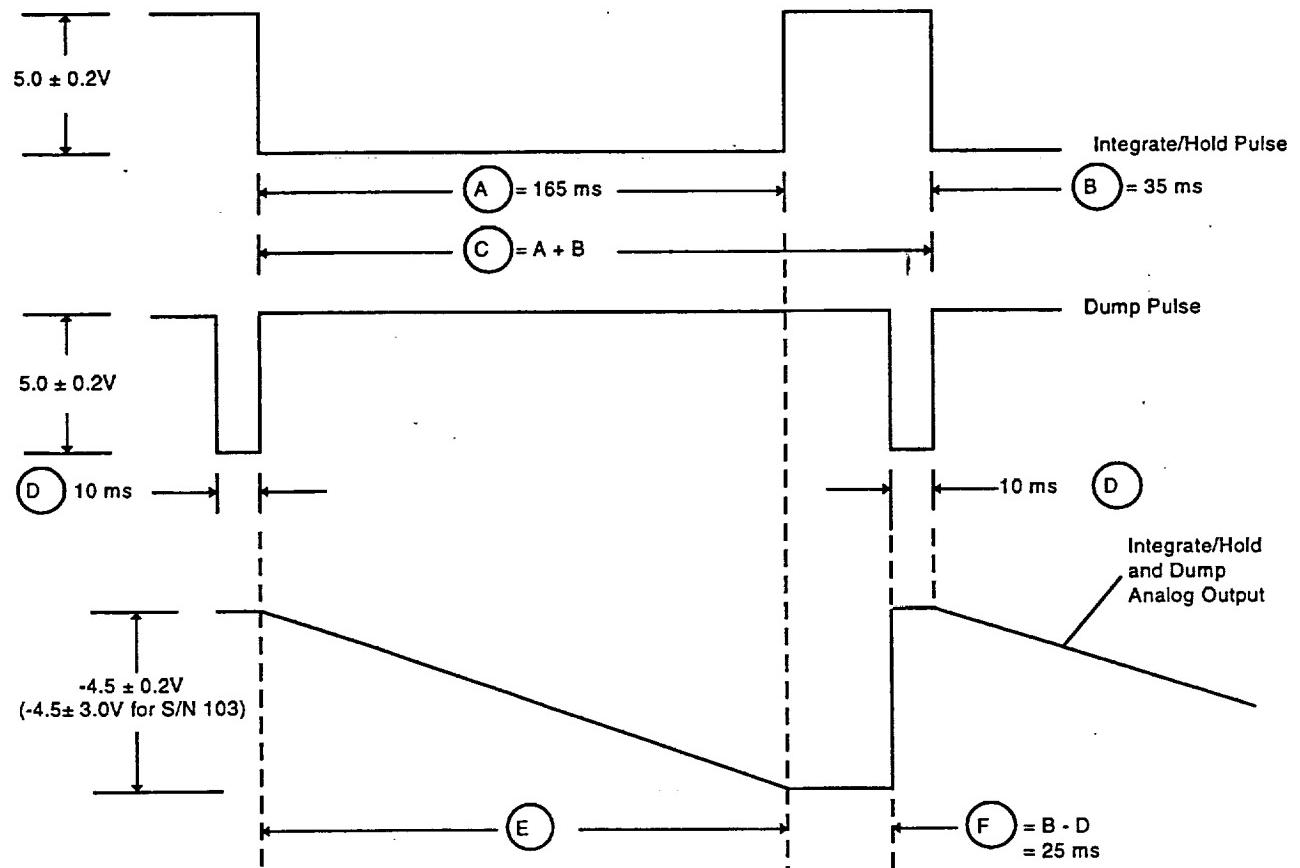
- a. Cold background at LN<sub>2</sub> temperature at room ambient.
- b. +28 ± 1 Vdc, 3 Amps.

**3.2.3.3 Signal outputs.** Signal outputs, except for the test signals at J7, shall be monitored by the STE. The signal outputs at J7 are shown in Figure 2.

**3.2.3.4 Test software.** AMSU-A1 bonded software shall be used to operate the STE. During initialization of the STE, as specified in AE-26157, the A1 software shall be selected. The bonded software is being selected by the STE computer automatically during initialization of the STE.

**3.2.3.5 Initial turn-on.** When called for in the individual test procedures, turn on the unit as follows:

1. Turn on the STE and initialize the STE as specified in AE-26157.
2. Connect breakout box to J1 on the STE +28 V power supply cable J1.
3. Connect DVM to J1-1 (+) and J1-3 (RTN).
4. Verify that the STE power supply POWER switch on the STE +28 V power supply is ON and the power supply is adjusted to +28 ±0.5 Vdc.
5. Verify that the PWR and SW/TM switches on the STE power distribution unit are ON.
6. Enter the serial number (decimal equivalent of the identification number provided in the UIIS) for the unit under test using AE-26157, if necessary. Verify that the Main Menu (AMSU-A1 WHAT TYPE OF TEST?) is displayed on the STE CRT terminal display.
7. On the Main Menu, press the [2] MONITOR ONLY touch area (or type the number). The Monitor Only Menu will be displayed, with Block Monitor Data Select options shown in the middle (window) area of the screen.



NOTE: Timing Tolerances are  $\pm 10\%$ .

Figure 2. Signal Output at J7

8. On the Monitor Only Menu, press [14] COMMANDS. The Commands Menu will be displayed in the window area.
9. On the Commands Menu, press [9] MODULE POWER = CONNECT. Wait at least 18 seconds for command execution. This applies power to the unit.
10. Execute commands as necessary to obtain the following configuration:

COMMANDS				
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1	[18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO	[20]
POWER [4] ON				

11. Wait at least 18 seconds and observe the commands are acknowledged by STE.

12. Verify that the STE power supply is adjusted to +28 ±0.5 Vdc (see steps 2 through 4).
13. Verify that all breakout box switches are in the closed position.
14. According to the individual test procedures, execute commands as necessary to obtain the required commands configuration. Several commands can be executed at the same time.

**3.2.3.6 Turn-off methods.** The unit can be turned off immediately by pressing [9] MODULE POWER = DISCONNECT on the Commands Menu. For a phased shutdown, press [11] MODULE TOTALLY OFF = OFF on the Commands Menu or press POWER [4] OFF on any display. When connecting breakout boxes to the unit or STE connectors, verify that the unit power is off and the STE +28 V power supply is manually turned off.

#### NOTE

If power of the unit is turned off by command [9] MODULE POWER = DISCONNECT or the STE program is interrupted, then perform a phased shutdown after turn-on before starting next step.

**3.2.4 Detailed performance tests.** The comprehensive performance tests for the AMSU-A1 system are to be carried out on the fully assembled and operational unit. The tests to be performed are as follows:

- a. Grounding/Isolation system test.
- b. Power system test.
- c. Clock commands and data system test.
- d. Radiometer functional test.
- e. Transient susceptibility test.
- f. Instrument feedback test.

**3.2.4.1 Grounding test.** This test provides the verification of the unit grounding requirements of GIIS IS-3267415 Paragraph 3.1.1 and UIIS IS-2617547 paragraph 3.1.1.

1. Connect breakout boxes to each of the spacecraft interface connectors J1 through J7 as shown in Figure 3. Verify that all connectors are protected with connector savers.
2. Measure and record continuity or isolation between the points shown on Test Data Sheet (TDS) 1.

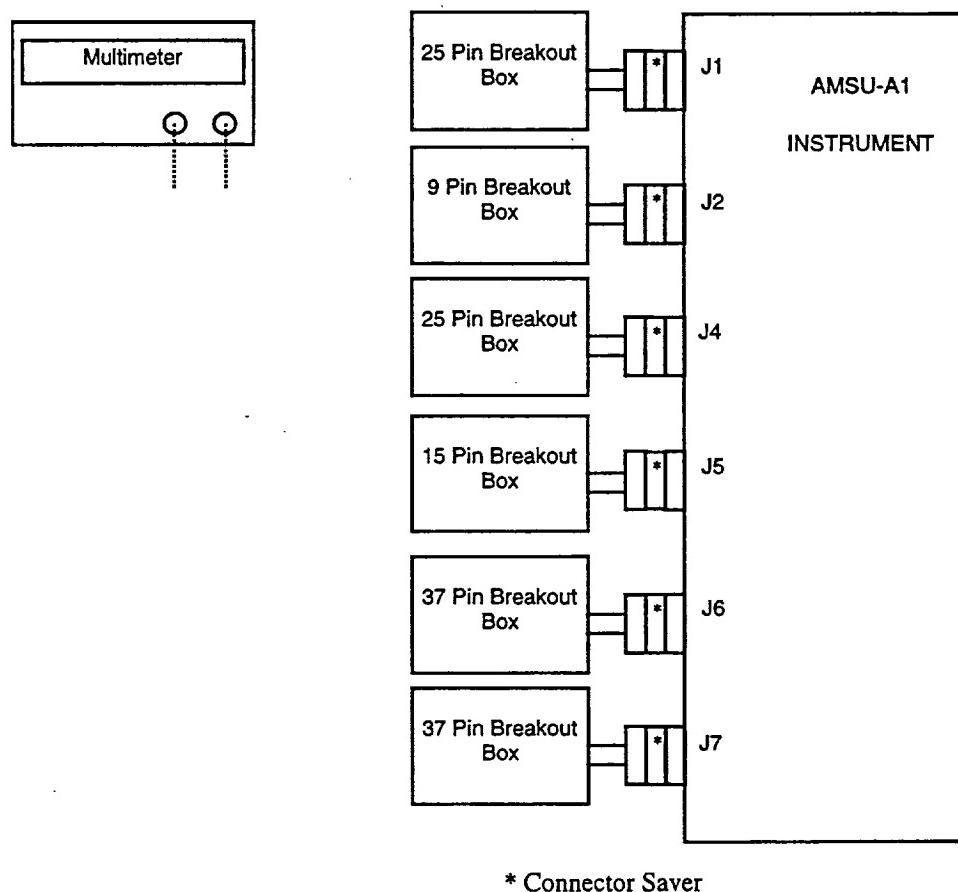


Figure 3. Grounding Test Setup

**3.2.4.2 Power system, transient susceptibility, power quality, and instrument feedback tests.** The purpose of these tests is to verify power system compliance in regard to:

- a. Turn-On transients
- b. Operating power
- c. Transient susceptibility
- d. Current ripple

The following DC voltage lines will be tested for the above parameters:

- a. +28 V Main Load Bus (parameters a, b, c, d)
- b. +28 V Pulse Load Bus (parameters a, b, c, d)
- c. +28 V Analog Telemetry Bus (parameters b, c, d)
- d. +10 V Interface Bus (parameters b, d)

#### 4.4.2.1 +28 V main load bus test

3.2.4.2.1.1 +28 V MLB during turn on transient. The +28 V MLB (at 28.56 Vdc) during turn on, shall be verified as follows:

1. Configure the unit and test equipment as shown in Figure 4. Obtain DSA trigger from J4-14. Verify that switches 1, 2, 14 and 15 of the breakout box are in the OPEN position. Disconnect +28 Vdc external power supply output at J1 and adjust the power supply to read  $28.56 \pm 0.05$  Vdc on voltmeter. Re-connect the power supply output (J1) as shown in Figure 4.
2. Configure the Dynamic Signal Analyzer (DSA) as follows:

Select MEAS MODE

Select Time Capture  
Select Capture Select  
Select Capture Length; Enter 300.0; Select msec

Select FREQ

Select E SMPL Off  
Select Freq Span; Enter 25; Select kHz

Select SELECT MEAS

Select Power Spec  
Select CH1 Active

Select WINDOW

Select Hann

Select SOURCE

Select Source Off

Select AVG

Select Avg Off  
Select Tim Av Off

Select RANGE

Select Chan 1 Range; Enter 1; Select V

Select INPUT COUPLE

Select CH1 DC  
Select CH1 Ground

Select INPUT TRIG

Select Trig Level; Enter 100; Select mV  
Select Arm AU  
Select Ext; Select (-) Slope

Select TRIG DELAY

Enter 0; Select  $\mu$ Sec

Select COORD

Select Real

Select VIEW INPUT

Select Time Buff

Select SCALE

Select X Fixd Scale; Enter 0.0, 300; Select msec  
Select Y Fixd Scale; Enter 0,80; Select mV

Select UNITS

Select Hz (sec)

#### NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 1.0 A/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to  $\pm 4$  mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 4, and return the DSA to "Ext" trigger.

3. Turn the unit ON by selecting [9] MODULE POWER; set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, adjust the external power supply for 28 Vdc.

		COMMANDS	
[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS = NO [15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS= NO [16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE = YES [17]
[12]	SCANNER A1-1 POWER =	ON	PLL POWER = PLL#1 [18]
[13]	SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB = ZERO [19]
[14]	ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB = ZERO [20]
POWER [4]	ON		

4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
5. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
6. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 MLB Turn-On current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements (refer to Figure 5 or Figure 6 for an example of per division values). Plot the obtained waveform and attach a hard copy of the scan to TDS 2.
7. Measure the Turn-On time to reach steady state current; record this value on TDS 2.
8. Compute the peak current as follows:  
 Measure the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 1.0 A/10 mV per division, and the maximum Y value = 46.8 mV:
- $$46.8 \text{ mV} \times (1.0 \text{ A}/10 \text{ mV}) = 4.68 \text{ amps}$$
- Record this value on TDS 2.
9. The 1<sup>st</sup> derivative of the current waveform must be calculated. Compute the dI/dT as follows:  
 The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand that segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/dT. Example:
- |  |               |
|--|---------------|
| Change in voltage .....                | 35.29 mV      |
| Change in time (microseconds).....     | 31.25 $\mu$ s |
| Current/div on current amplifier ..... | 1000 mA/10 mV |
- $$35.29 \text{ mV} \times (1000 \text{ mA}/10 \text{ mV})/31.25 \mu\text{s} = 112.9 \text{ mA}/\mu\text{s}$$
10. Record the computed value on TDS 2.
11. With the multimeter, adjust the external power supply to  $27.44 \pm 0.05$  Vdc as measured between J1-1 (high) and J1-3 (low).

12. Repeat steps 3 through 10.
13. With the multimeter, adjust the external power supply to  $28.00 \pm 0.05$  Vdc as measured between J1-1 (high) and J1-3 (low).
14. Repeat steps 3 through 10.

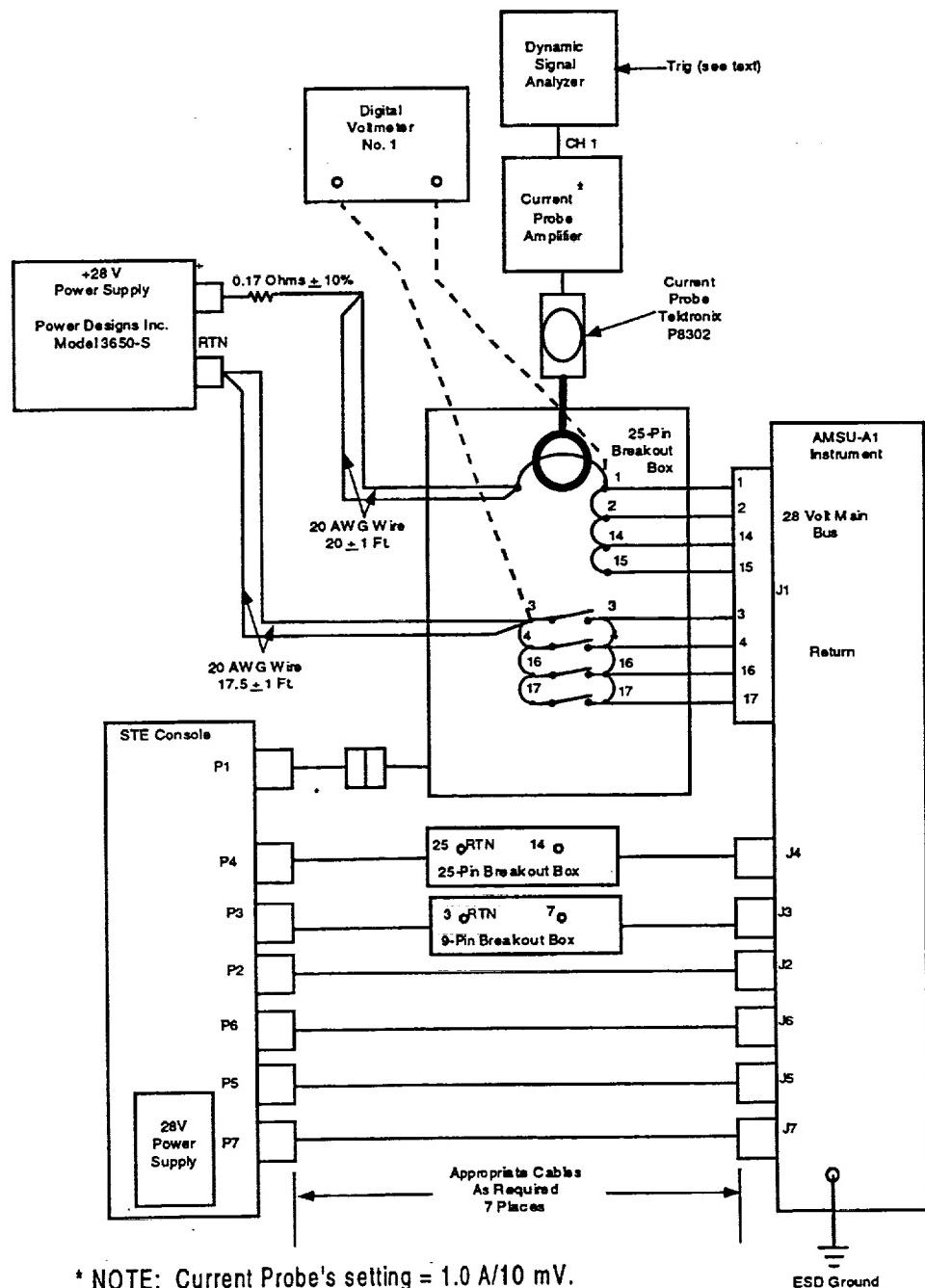
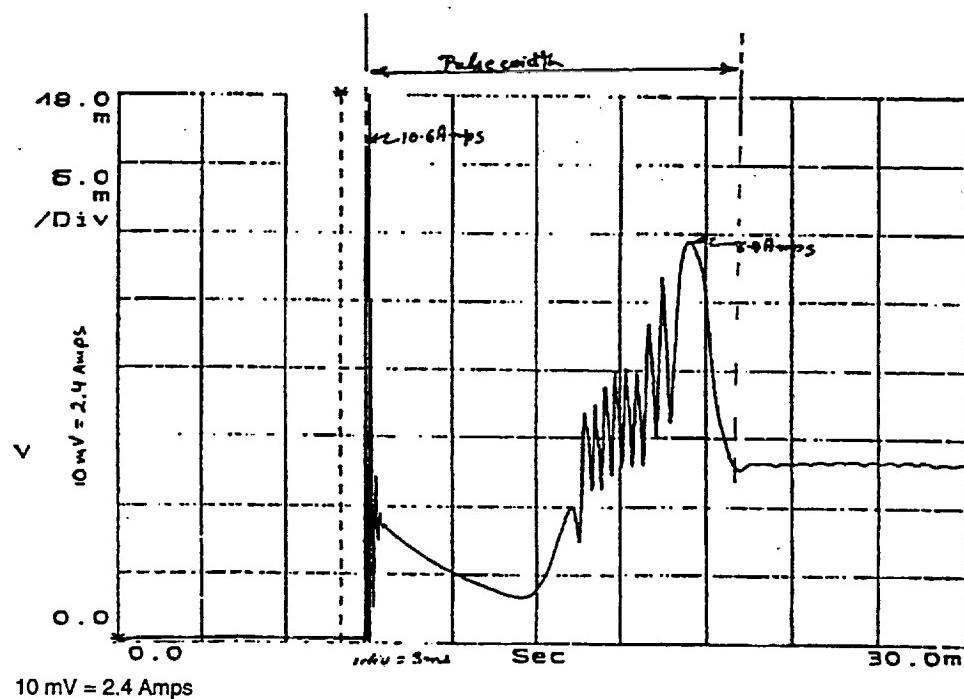
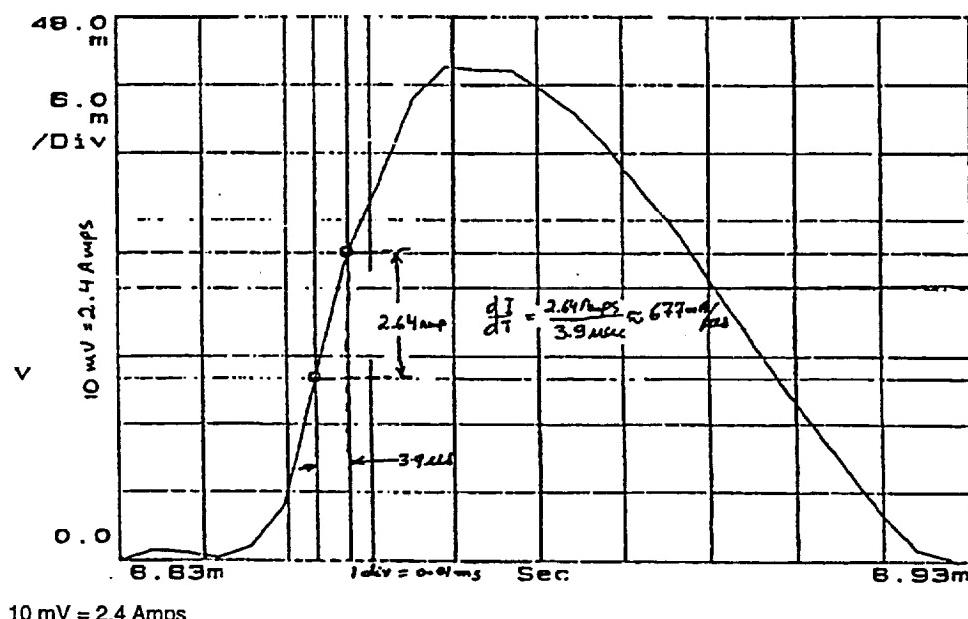


Figure 4. +28 V Main Load Bus Verification Setup

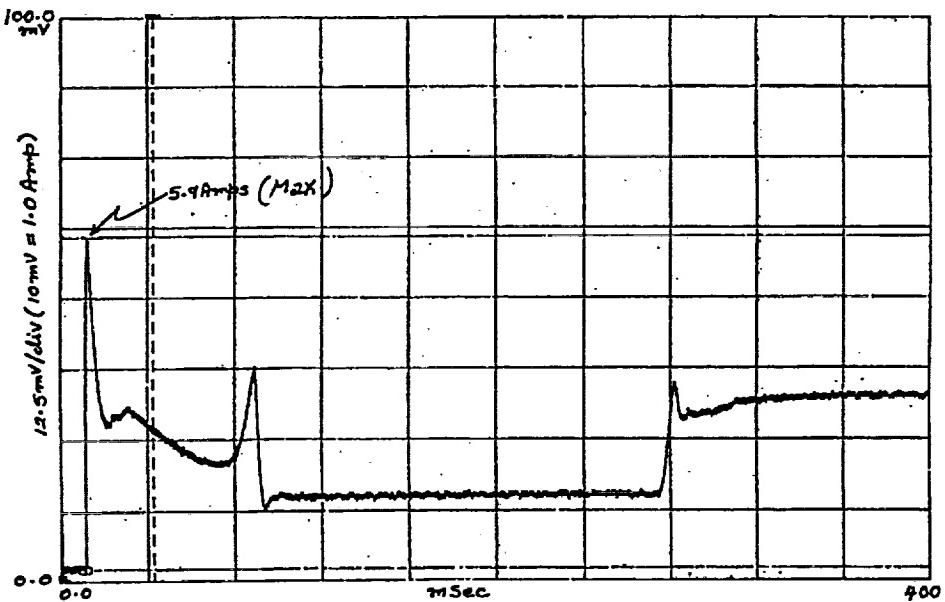


AMSU-A1 (S/N 102) Main Load Bus Worst Case Transient

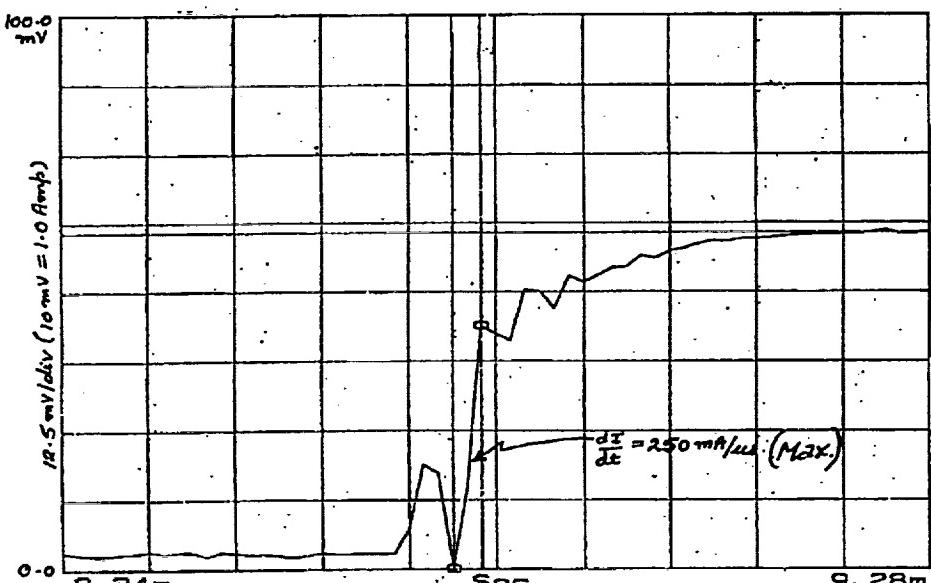


AMSU-A1 (S/N 102) Main Load Bus  $\frac{dI}{dT}$  at Worst Case Transient

Figure 5. +28 V Main Bus Load Peak Power for KLM (S/N 102, 103 and 104)



AMSU-A1 Main Load Bus Worst Case Turn-on Transient



AMSU-A1 Main Load Bus  $\frac{dI}{dT}$  at Worst Case Turn-on Transient

Figure 6. +28 V Main Bus Load Peak Power for METSAT (S/N 105 and up)

AE-26156/3B  
10 Mar 99

e, and power as follows:

rify that switches 1, 2, 14 and 15 of the

ternal power supply, turn power supplies  
1.1, step 3. While monitoring voltmeter  
ure 4). Record the voltage displayed on

age on TDS 3.

ge on TDS 3.

E.C.T.

Following paragraphs will be performed  
not exceed 150 mA, and frequency  
quency component, it shall not be a

Vdc MLB ripple current measurement

a DSA trigger from J2-7. Select 20.0





1-4

- 5 ENTER COMMAND [18] PLL POWER TO CHANGE FROM PLO #1 TO PLO #2 ACTIVE. ALLOW THE INSTRUMENT TO STABILIZE FOR A MINIMUM OF TWO MINUTES
- 6 RECORD THE OPERATING CURRENT ON TDS 3
- 7 COMPUTE THE OPERATING POWER (IN WATTS) AS EXPLAINED IN TDS 3
- 8 ENTER COMMAND [18] PLL POWER TO CHANGE FROM PLO#2 BACK TO PLO #1 ACTIVE, ALLOW THE INSTRUMENT TO STABILIZE FOR A MINIMUM OF TWO MINUTES

9-11

12 Repeat of 5 THROUGH 8

13

14

15

16-18

19 Repeat of 5 THROUGH 8

20

21

22

2. Set up the DSA as follows:

Select MEAS MODE

Select Time Capture

Select Capture Select

Select Capture Length; Enter 1; Select Record

Select FREQ

Select Freq Span; Enter 100.0; Select Hz

Select E SMPL Off

Select Time Length; Enter 8.0; Select Sec

Select SELECT MEAS

Select Power Spec

Select CH1 Active

Select WINDOW

Select Hann

Select SOURCE

Select Source Off

Select AVG

Select Avg Off

Select Tim Av Off

Select RANGE

Select Aut 1 Rng up

Select INPUT COUPLE

Select CH1 DC

Select CH1 Ground

Select SELECT TRIG

Select Trig Level; Enter 10; Select mV

Select Arm AU

Select Free Run

Select TRIG DELAY

Enter 0.0; Select Sec

Select COORD

Select Real

Select VIEW INPUT

Select Time Buff

Select SCALE

Select X Fixd Scale; Enter 0.0, 8.0; Select Sec

Select Y Fixd Scale; Enter -10.0, 70.0; Select mV

Select UNITS

Select Hz (sec)

3. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
4. Acquire 8 seconds of data on the DSA by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor ON. The cursor will appear at the largest peak. Make a plot of this display.
6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:  
Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276  $\mu$ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

**3.2.4.2.1.4 Transient susceptibility and power quality tests.** The power tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

**3.2.4.2.1.4.1 Equipment setup.** Set up the test equipment and connect to the instrument as shown in Figure 7.

**3.2.4.2.1.4.2 Low frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 8. Perform the Low Frequency Load Induced Transients test as follows:

1. With the exception of the external power supply, turn ON all the test equipment.

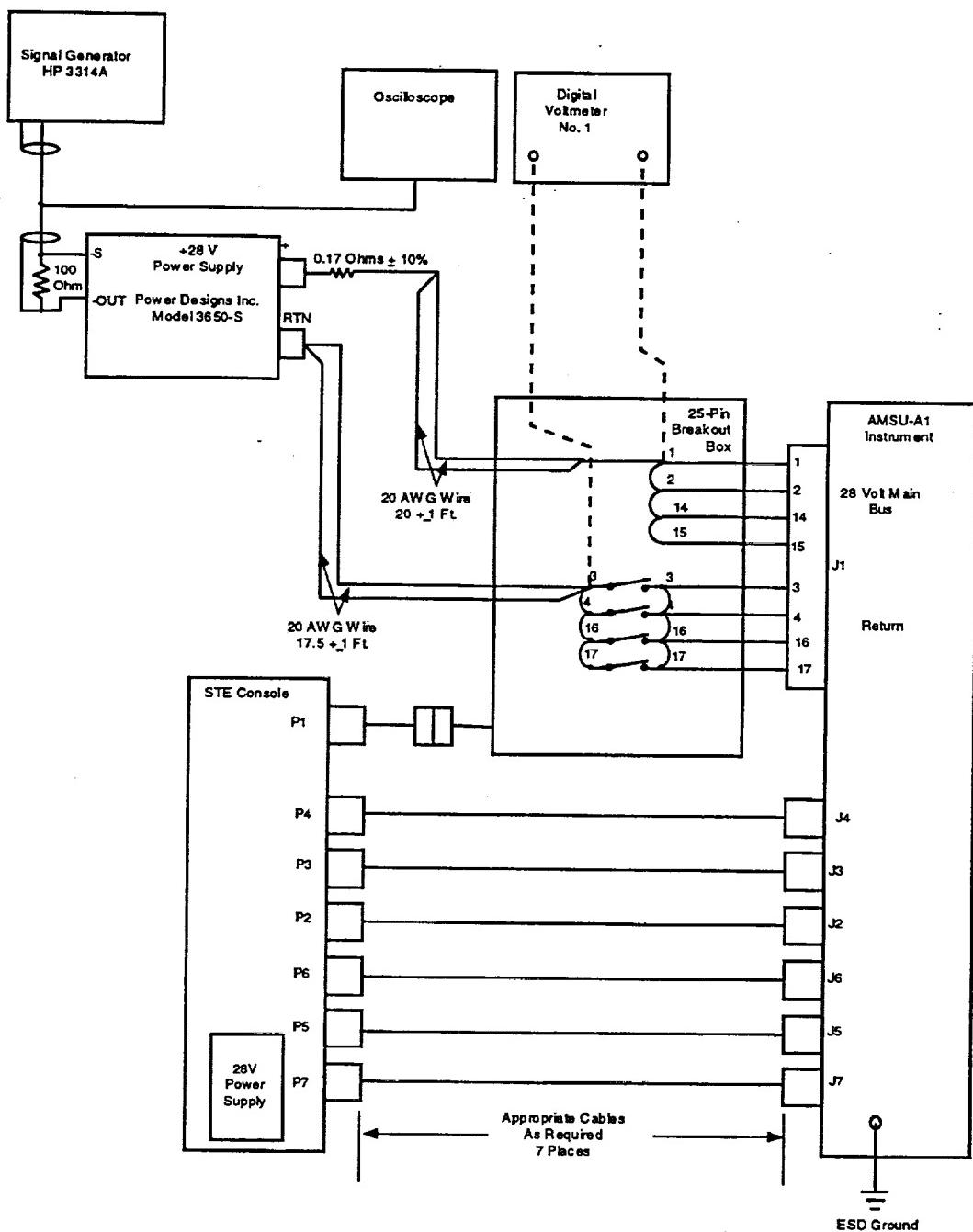
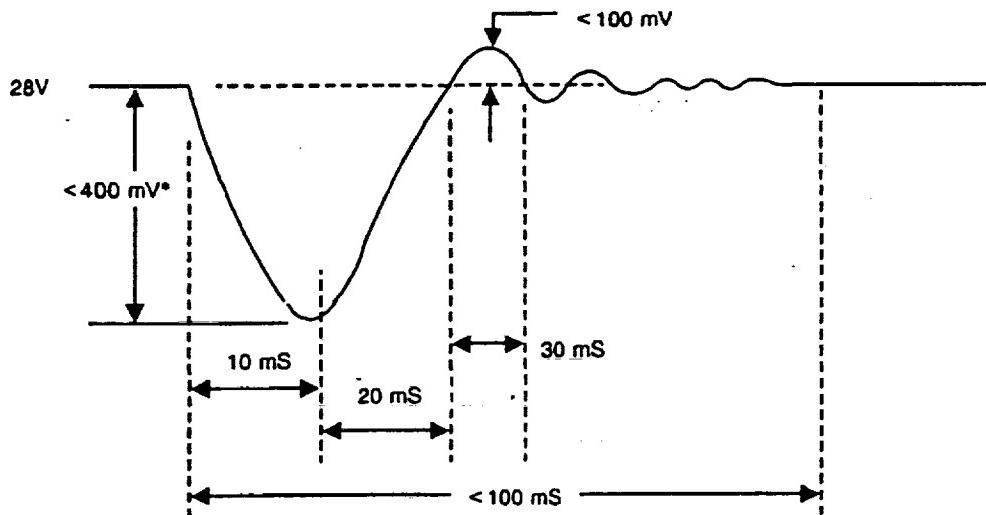


Figure 7. +28 V MLB Transient Susceptibility and Power Quality Tests Setup



\* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure 8. Load Induced Transient (Main Bus)

2. Place the signal generator in ARB 0 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 8.
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three scans. Remove the signal generator output from the power supply.
7. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
8. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

**3.2.4.2.1.4.3 High frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

<u>Frequency (Hz)</u>	<u>Amplitude</u>
1.43 .....	200 mVpp
2.86 .....	1.00 Vpp
6.67 .....	1.50 Vpp

Tolerance on the above values is  $\pm 10\%$ .

Perform High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude ..... 200 mVpp  
offset ..... 0.000 V  
frequency ..... 1.430 Hz

3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three scans. Remove the signal generator output from the power supply.
7. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.
10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

#### **3.2.4.2.2 +28 V pulse load bus test**

**3.2.4.2.2.1 PLB during the first two seconds.** The PLB operation, during the first two seconds, shall be verified as follows:

1. Configure the unit and test equipment as indicated in Figure 9. Obtain DSA trigger from J2-7. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position.
2. Disconnect +28 Vdc external power supply output and adjust the power supply to read  $28.00 \pm 0.05$  Vdc by using DVM. Re-connect power supply output as shown in Figure 9.

3. Configure the dynamic signal analyzer as follows:

Select MEAS MODE

Select Time Capture

Select Capture Select

Select Capture Length; Enter 1; Select Record

Select FREQ

Select Freq Span; Enter 100; Select Hz

Select E SMPL Off

Select Time Length; Enter 8.0; Select Sec

Select SELECT MEAS

Select Power Spec

Select CH1 Active

Select WINDOW

Select Hann

Select SOURCE

Select Source Off

Select AVG

Select Avg Off

Select Tim Av Off

Select RANGE

Select Aut 1 Rng up

Select INPUT COUPLE

Select CH1 DC

Select CH1 Ground

Select INPUT TRIG

Select Trig Level; Enter 1.5; Select V

Select Arm AU

Select Ext

Select Slope -

Select TRIG DELAY

Enter 0.0; Select Sec

Select COORD

Select Real

Select VIEW INPUT

Select Time Buff

Select SCALE

Select X Fixd Scale; Enter 0.0, 8.0; Select Sec

Select Y Fixd Scale; Enter -10.0, 70.0; Select mV

Select UNITS

Select Hz (sec)

NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 200 mA/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to  $\pm 4$  mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 9, and return the DSA to "Ext" trigger.

The instrument is now ready to capture and plot 8 seconds of data.

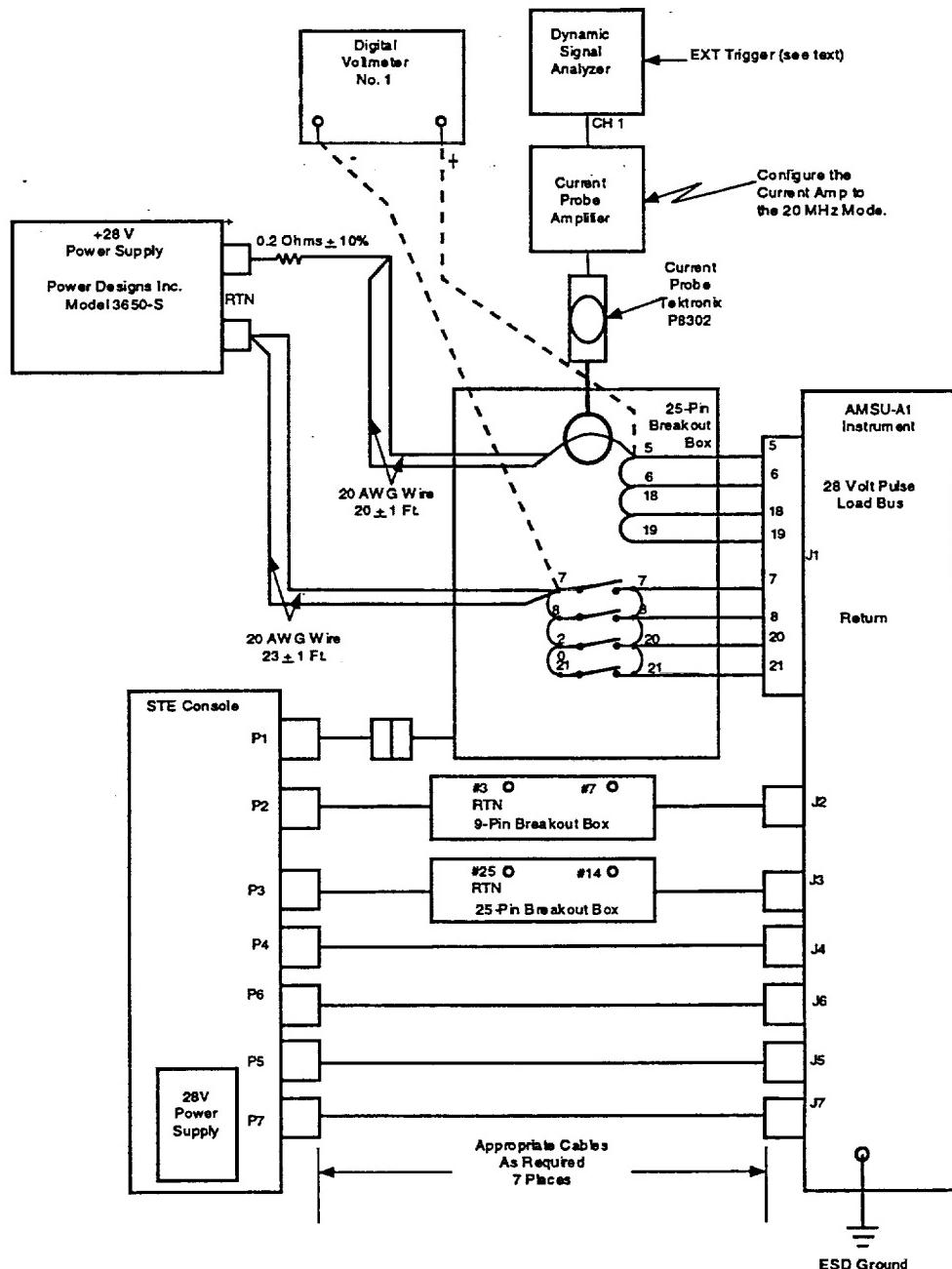


Figure 9. +28 V Pulse Load Verification Setup

4. Adjust external power supply for +28 Vdc. Turn the unit ON by selecting [9] MODULE POWER, set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28 Vdc.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLL#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER {4} ON			

5. Start the DSA signal capture by depressing "Start Capture".
6. Obtain the first 2 second PLB current waveform by selecting 0 to 2 seconds time span. Refer to Figure 10 for a typical waveform. Turn OFF the "X" cursor if it is ON. Turn the "X" cursor ON. The cursor will appear at the highest peak. Ensure this value is less than or equal to 1.3 amps. Record value on TDS 4.
7. Compute the peak current as follows:

Multiply the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 276 mV:

$$60 \text{ mV} \times (200 \text{ mA}/10 \text{ mV}) = 1200 \text{ mA} = 1.20 \text{ amps}$$

#### 3.2.4.2.2.2 PLB measured from 2 to 4 seconds. The PLB operation, from 2 to 4 seconds, shall be verified as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).
2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 1.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 10 for typical waveform).
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

#### 3.2.4.2.2.3 PLB measured from 4 to 6 seconds. The PLB operation, from 4 to 6 seconds, shall be verified as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).
2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 3.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 10 for typical waveform).
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

#### 3.2.4.2.2.4 PLB measured from 6 to 8 seconds. The PLB shall be measured as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).

2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 5.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer.
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

**3.2.4.2.2.5 Eight second integrated current measurement.** To observe the PLB integrated (8 sec.) current waveform on the dynamic signal analyzer, configure the dynamic signal analyzer as follows:

Select SCALE

Select X Fxd Scale; Enter 0.0, 8; Select Sec  
Select Y Fxd Scale; Enter -10, 70; Select mV

Select VIEW INPUT

Select Time Record: Note – the display heading changes to read “Cap Tim Rec”

Select MATH

Select Next

Select Intgrt:

Note – the display changes to present an integrated value of the current waveform.

Select X (cursor)

Move the X marker to the maximum right of the display. The Y value is indicative of the integrated current value over the entire 8 second period (in amp-sec).

Multiply the maximum Y value by the current/div as selected on the current amplifier, then divide by 8 seconds to acquire the average current value. As an example: if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 32.4 mV-sec:

$$[32.4 \text{ mV-sec} \times (200 \text{ mA}/10 \text{ mV})]/8 \text{ sec} = 81 \text{ mA}$$

Enter the calculated integrated value on TDS 4.

**3.2.4.2.2.6 PLB turn-on transient**

1. Configure the unit and test equipment as shown in Figure 9. Obtain DSA trigger from J4-14. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position.

2. Configure the Dynamic Signal Analyzer (DSA) as follows:

Select MEAS MODE	Select INPUT COUPLE
Select Time Capture	Select CH1 DC
Select Capture Select	Select CH1 Ground
Select Capture Length; Enter 500.0; Select msec	Select INPUT TRIG
Select FREQ	Select Trig Level; Enter 1; Select V
Select Freq Span; Enter 20; Select kHz	Select Arm AU
Select E SMPL Off	Select External
Select Time Length; Enter 32.0;	Select Ext; Select Slope(-)
Select msec	Select TRIG DELAY
Select SELECT MEAS	Enter 0; Select $\mu$ Sec
Select Power Spec	Select COORD
Select CH1 Active	Select Real
Select WINDOW	Select VIEW INPUT
Select Hann	Select Time Buff
Select SOURCE	Select SCALE
Select Source Off	Select X Fxd Scale; Enter 0.0, 25
Select AVG	Select msec
Select Avg Off	Select Y Fxd Scale; Enter -10, 470
Select Tim Av Off	Select mV
Select RANGE	Select UNITS
Select Chan 1 Range; Enter 1; Select V	Select Hz (sec)

NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 200 mA/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to  $\pm 4$  mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 9, and return the DSA to "Ext" trigger.

3. Adjust external power supply for +28 Vdc. Turn the unit ON by selecting [9] MODULE POWER; set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28 Vdc.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
5. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
6. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 PLB Turn on current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements. Plot the obtained waveform and attach a hard copy of the scan to TDS 4. Refer to Figure 11 for an example of the expected waveform.
7. Measure the Turn-On pulse width; record this value on TDS 4.
8. Compute the peak current as follows:

Measure the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 276 mV:

$$276 \text{ mV} \times (200 \text{ mA}/10 \text{ mV}) = 5520 \text{ mA} = 5.52 \text{ amps}$$

Record this value on TDS 4.

9. The 1<sup>st</sup> derivative of the current waveform must be calculated. Compute the dI/dT as follows:

The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand the segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/dT. Example:

Change in voltage .....	144 mV
Change in time (microseconds).....	19.5 $\mu$ s
Current/div on current amplifier .....	200 mA/10 mV

$$144 \text{ mV} \times (200 \text{ mA}/10 \text{ mV})/19.5 \mu\text{s} = 147.7 \text{ mA}/\mu\text{s}$$

10. Record the computed value on TDS 4.

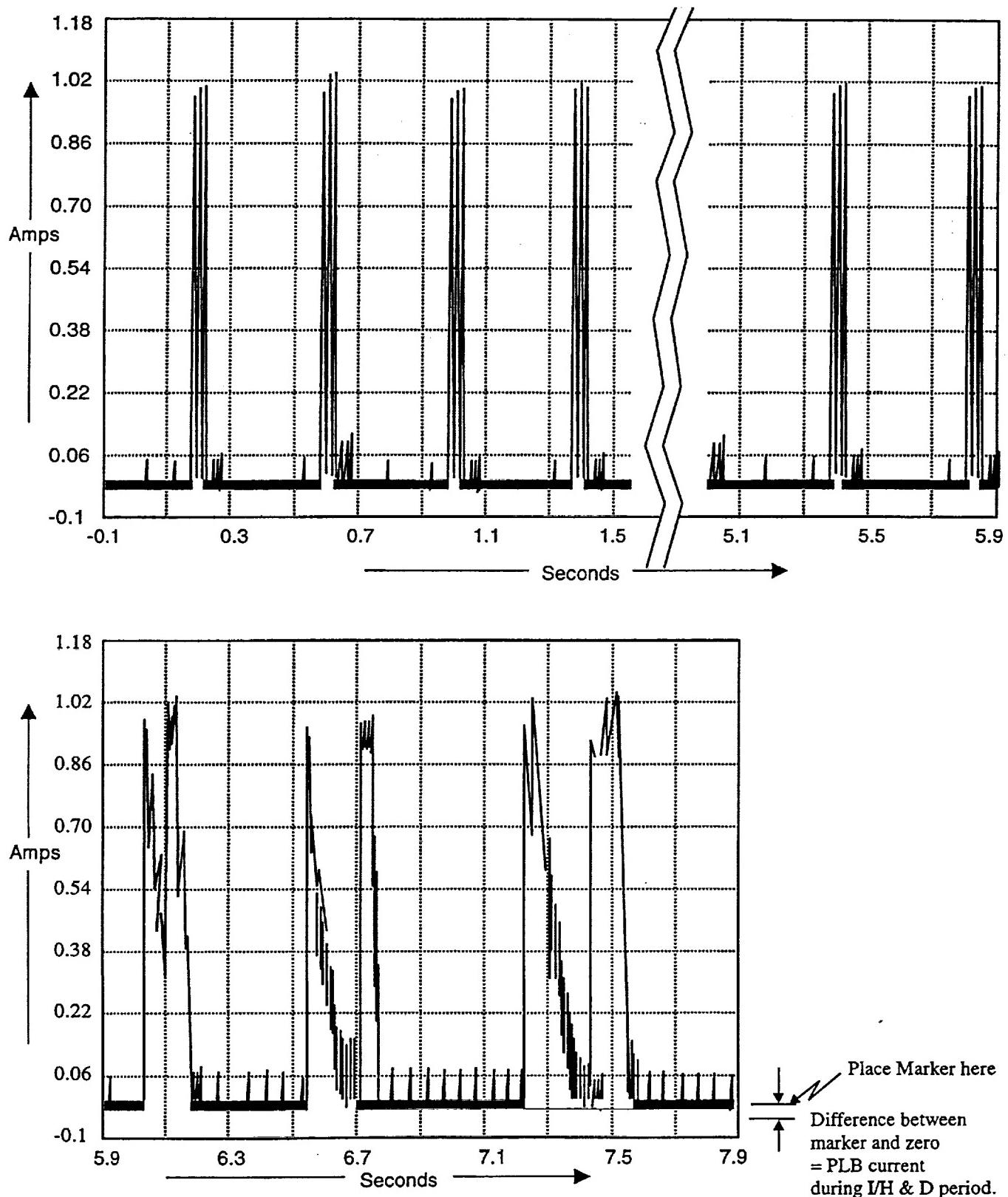


Figure 10. Typical Load Current Waveforms from the +28 V Pulse Load Bus

### 3.2.4.2.2.7 PLB current in warm cal, cold cal and Nadir mode

1. Place instrument in Warm Cal mode.
2. Measure and record PLB steady state current on TDS 4 with a multimeter in the Current mode.
3. Repeat step 2 after placing instrument in Cold Cal mode.
4. Repeat step 2 after placing instrument in Nadir mode.

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5. Repeat step 2 after placing instrument in Warm Cal mode and command bus motors off

3.2.4.2.2.8 Instrument feedback test (PLB). The instrument feedback test contained in the following paragraphs will be performed on the 28 Vdc Pulse Load power line. The peak-to-peak ripple current shall not exceed 43 mA while the instrument is in the Warm Cal mode.

### 3.2.4.2.2.8.1 28 Vdc pulse load bus ripple current measurement

1. Connect the instrument and test equipment as shown in Figure 9. Obtain DSA trigger from J2-7.
2. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
3. Set up the DSA as shown below:

#### Select MEAS MODE

- Select Time Capture
- Select Capture Select
- Select Capture Length; Enter 1; Select Record

#### Select FREQ

- Select Freq Span; Enter 100.0; Select Hz
- Select E SMPL Off
- Select Time Length; Enter 8.0; Select Sec

#### Select SELECT MEAS

- Select Power Spec
- Select CH1 Active

#### Select WINDOW

- Select Hann

#### Select SOURCE

- Select Source Off

#### Select AVG

- Select Avg Off
- Select Tim Av Off

#### Select RANGE

- Select Aut 1 Rng up

#### Select INPUT COUPLE

- Select CH1 DC
- Select CH1 Ground

#### Select SELECT TRIG

- Select Trig Level; Enter 10; Select mV
- Select Arm AU

#### Select Free Run

#### Select TRIG DELAY

- Enter 0.0; Select Sec

#### Select COORD

- Select Real

#### Select VIEW INPUT

- Select Time Buff

#### Select SCALE

- Select X Fixed Scale; Enter 0.0, 8.0

- Select Sec

- Select Y Fixed Scale; Enter -10.0, 70.0;

- Select mV

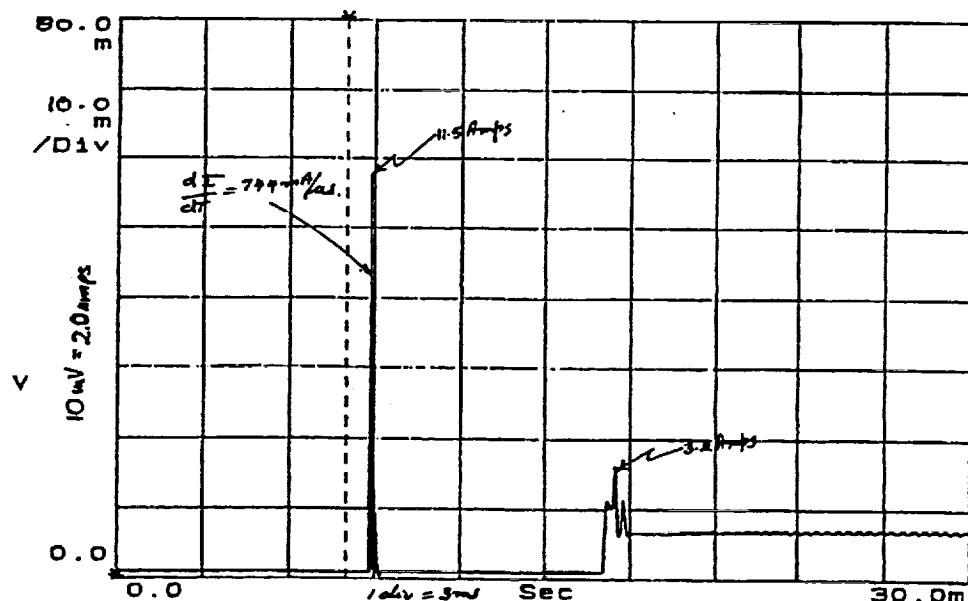
#### Select UNITS

- Select Hz (sec)

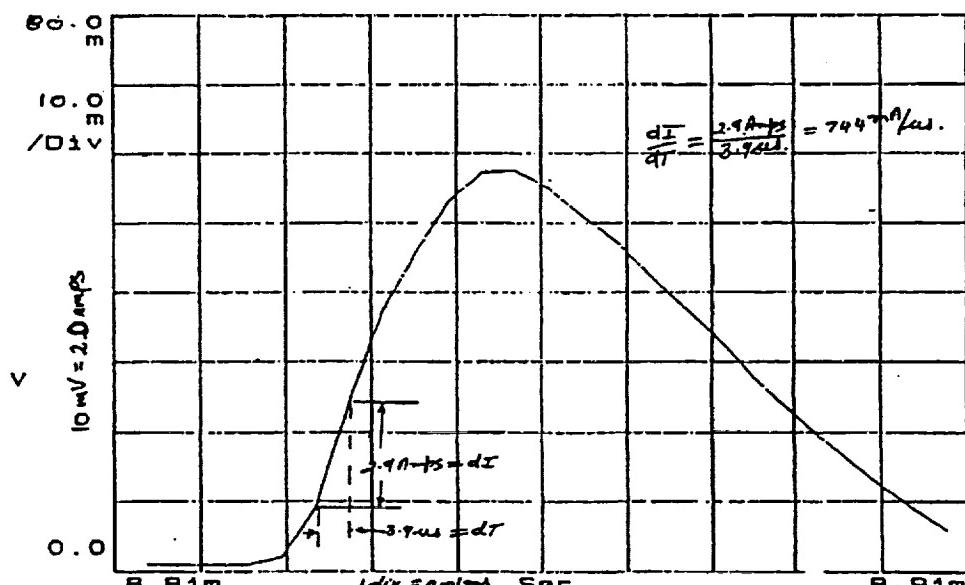
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5, except place the instrument in the Warm Cal mode.
5. Acquire 8 seconds of data on the DSA by depressing "Start Capture".
6. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor ON. The cursor will appear at the highest peak. Make a plot of this display.
7. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.

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6 After STABILIZING FOR A MINIMUM OF 20 SCANS, TAKE A FULL PRINT AND ATTACH TO TDS 4.



AMSU-A1 PLB Worst Case Transient



AMSU-A1 PLB  $\frac{dI}{dT}$  Worst Case Transient

Figure 11. +28V Pulse Load Bus Turn-on Transient

8. Compute the peak current as follows:

Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the maximum Y value = 276  $\mu$ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

**3.2.4.2.2.9 Transient susceptibility and power quality tests.** The tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

**3.2.4.2.2.9.1 Equipment setup.** Set up the test equipment and connect to the instrument as shown in Figure 12.

**3.2.4.2.2.9.2 Low frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the Pulse Load Bus power line at the amplitude and duration specified in Figure 13. Perform the Low Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. Place the signal generator in ARB 1 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 13.
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
8. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

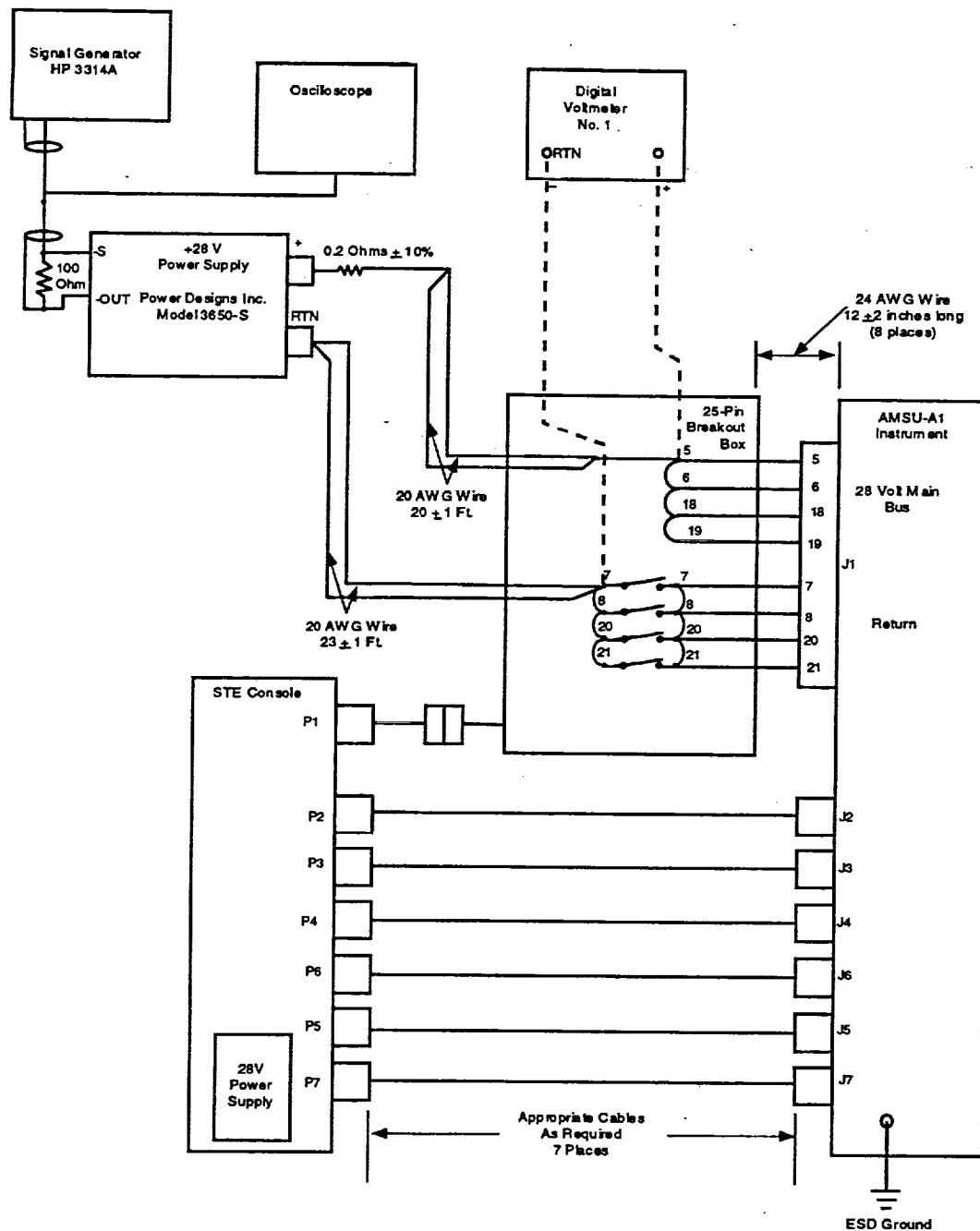


Figure 12. +28V PLB Transient Susceptibility and Power Quality Tests Setup

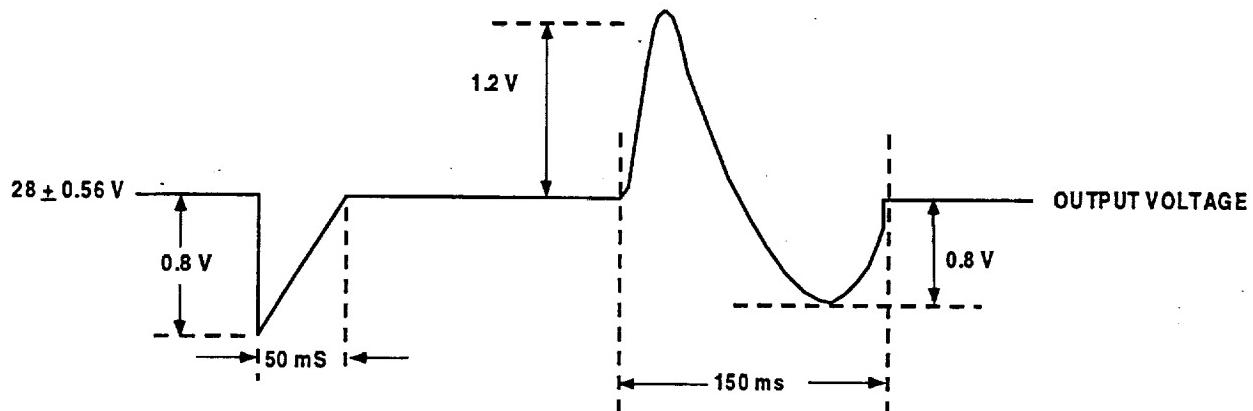


Figure 13. Load Induced Transient (Pulse Load)

**3.2.4.2.2.9.3 High frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

<u>Frequency (Hz)</u>	<u>Amplitude</u>
1.43 .....	200 mVpp
2.86 .....	1.00 Vpp
6.67 .....	1.50 Vpp

Tolerance on the above values is ±10%.

Perform the High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude ..... 200 mVpp  
offset ..... 0.000 V  
frequency ..... 1.430 Hz

3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.

10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

#### 3.2.4.2.3 Analog telemetry bus

**3.2.4.2.3.1 Operating power measurements.** The purpose of this test is to calculate the operating power of the Analog Telemetry Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 14.
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
3. Measure the bus current and record on TDS 5.
4. From the measurements recorded on TDS 5, calculate the operating power for the telemetry bus and record on TDS 5.

**3.2.4.2.3.2 Instrument feedback test (ATB).** The instrument feedback test contained in the following paragraphs will be performed on the Analog Telemetry Bus power line. The peak-to-peak ripple current shall not exceed 0.29 mA.

##### 3.2.4.2.3.2.1 28 Vdc analog telemetry bus ripple current measurement

1. Connect the instrument and test equipment as shown in Figure 15. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
2. Set up the DSA as follows:

Select MEAS MODE	Select INPUT COUPLE
Select Time Capture	Select CH1 DC
Select Capture Select	Select CH1 Ground
Select Capture Length; Enter I; Select Record	Select SELECT TRIG
Select FREQ	Select Trig Level; Enter 10; Select mV
Select Freq Span; Enter 100.0; Select Hz	Select Arm AU
Select E SMPL Off	Select Free Run
Select Time Length; Enter 8.0; Select Sec	Select TRIG DELAY
Select SELECT MEAS	Enter 0.0; Select Sec
Select Power Spec	Select COORD
Select CH1 Active	Select Real
Select WINDOW	Select VIEW INPUT
Select Hann	Select Time Buff
Select SOURCE	Select SCALE
Select Source Off	Select X Fixd Scale; Enter 0.0, 8.0
Select AVG	Select Sec
Select Avg Off	Select Y Fixd Scale; Enter -1.0, 7.0;
Select Tim Av Off	Select mV
Select RANGE	Select UNITS
Select Aut I Rng up	Select Hz (sec)

3. Ensure that the instrument is OFF (MODULE POWER = DISCONNECT).
4. Acquire 8 seconds of data by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor back ON. The cursor will appear at the highest peak. Make a plot of this display.

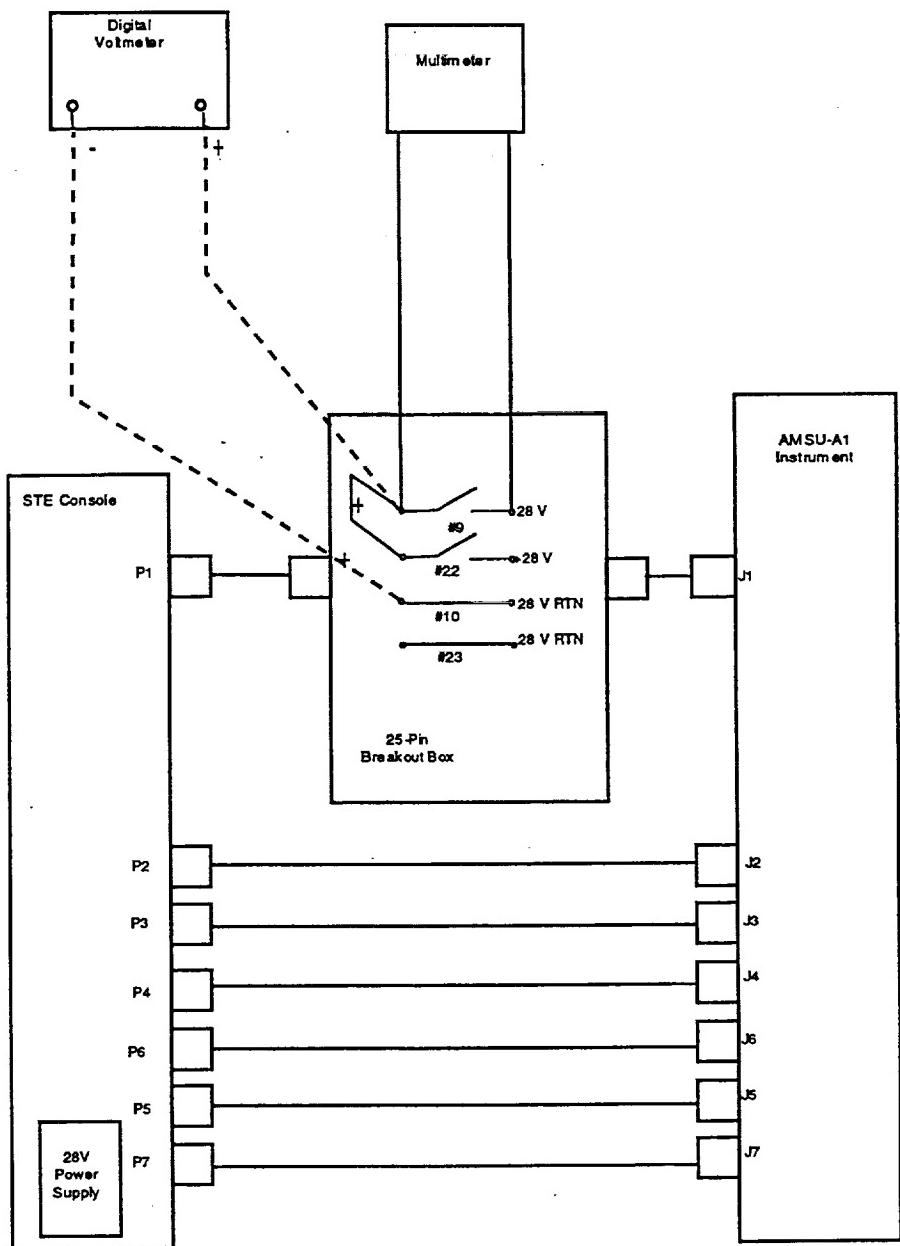


Figure 14. +28V Analog Telemetry Bus Test Setup

6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:  
Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276  $\mu$ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

**3.2.4.2.3.3 Transient susceptibility and power quality tests (ATB).** The tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines

**3.2.4.2.3.3.1 Equipment setup.** Set up the test equipment and connect to the instrument as shown in Figure 15 (exceptions: remove the current probe and amplifier; connect the oscilloscope to monitor output of the signal generator).

**3.2.4.2.3.3.2 Low frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 16. Perform the Low Frequency Load Induced Transients as follows:

- 1 With the exception of the external power supply, turn ON all the test equipment.
- 2 Place the signal generator in ARB 0 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 16.
- 3 Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
- 4 Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
- 5 Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
- 6 Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
- 7 Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
- 8 Record any deviations in the functional performance of the AMSU instrument on TDS 51.

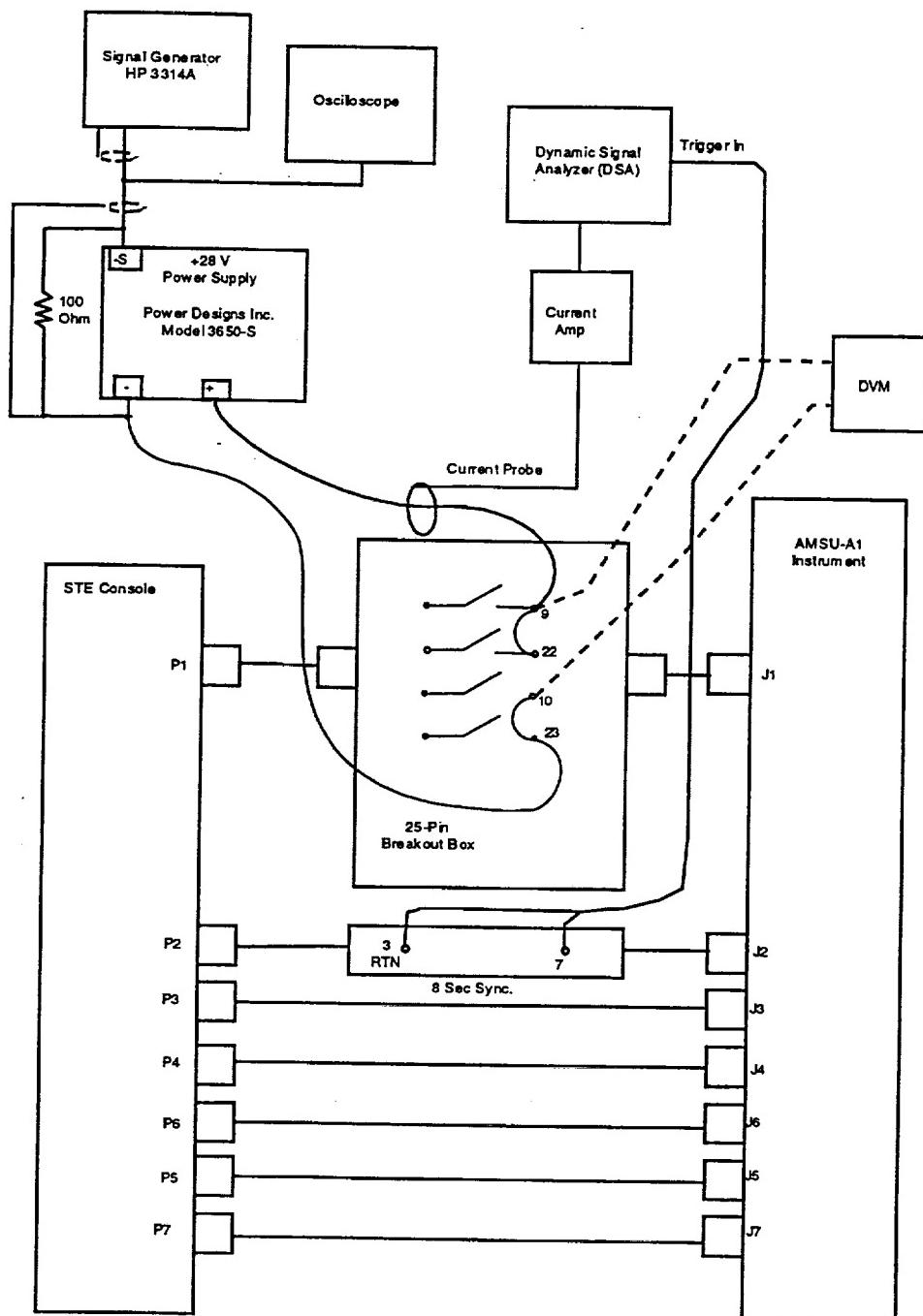
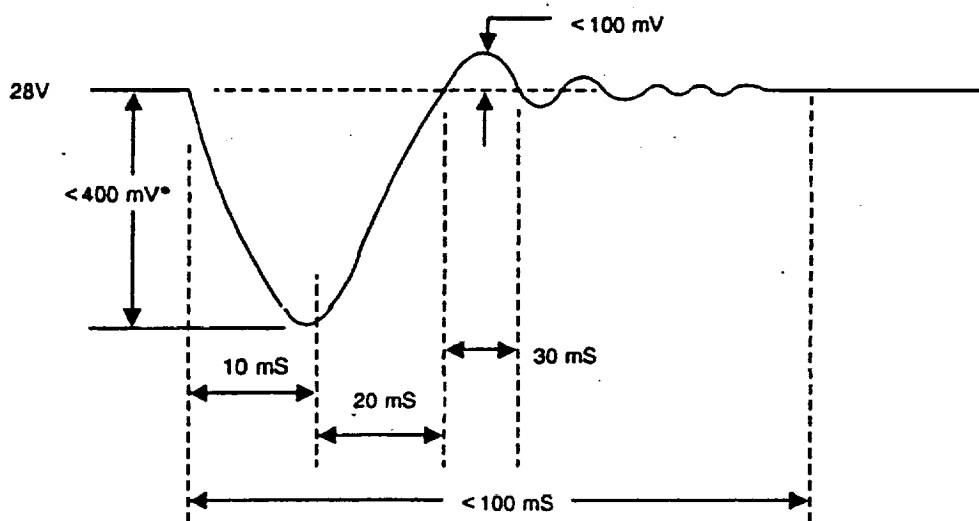


Figure 15. +28 Vdc Analog Telemetry Bus Ripple Current and Transient Susceptibility Test Setup



\* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure 16. Load Induced Transient (Main Bus)

**3.2.4.2.3.3.3 High frequency load induced transients.** The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

<u>Frequency (Hz)</u>	<u>Amplitude</u>
1.43 .....	200 mVpp
2.86 .....	1.00 Vpp
6.67 .....	1.50 Vpp

Tolerance on above values is  $\pm 10\%$ .

Perform the High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

..... amplitude 200 mVpp  
offset ..... 0.000 V  
frequency ..... 1.430 Hz

3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.

7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.
10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

#### **3.2.4.2.4 +10 volt interface bus test**

**3.2.4.2.4.1 Operating power measurements.** The purpose of this test is to calculate the operating power of the +10 Vdc Interface Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 17.
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
3. Measure the bus current and record on TDS 6.
4. From the measurements recorded on TDS 6, calculate the operating power for the telemetry bus and record on TDS 6.

**3.2.4.2.4.2 Instrument feedback test.** The instrument feedback test contained in the following paragraphs will be performed on the +10 Vdc Interface Bus power line. The peak-to-peak ripple current shall not exceed 1 mA; in addition, the frequency of the ripple shall not exceed 2.5 MHz.

##### **3.2.4.2.4.2.1 +10 volt interface bus ripple current measurement**

1. Connect the instrument and test equipment as shown in Figure 17. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
2. Set up the DSA as shown below:

Select MEAS MODE	Select INPUT COUPLE
Select <i>Time Capture</i>	Select <i>CH1 DC</i>
Select <i>Capture Select</i>	Select <i>CH1 Ground</i>
Select <i>Capture Length</i> ; Enter 1 Select <i>Record</i>	Select SELECT TRIG
Select FREQ	Select <i>Trig Level</i> ; Enter 10, Select <i>mV</i>
Select <i>Freq Span</i> ; Enter 100.0; Select <i>Hz</i>	Select <i>Arm AU</i>
Select <i>E SMPL Off</i>	Select <i>Free Run</i>
Select <i>Time Length</i> ; Enter 8.0; Select <i>Sec</i>	Select TRIG DELAY
Select SELECT MEAS	Enter 0.0; Select <i>Sec</i>
Select <i>Power Spec</i>	Select COORD
Select <i>CH1 Active</i>	Select <i>Real</i>
Select WINDOW	Select VIEW INPUT
Select <i>Hann</i>	Select <i>Time Buff</i>
Select SOURCE	Select SCALE
Select <i>Source Off</i>	Select <i>X Fixd Scale</i> : Enter 0.0, 8.0
Select AVG	Select <i>Sec</i>
Select <i>Avg Off</i>	Select <i>Y Fixd Scale</i> : Enter -1.0, 7.0;
Select <i>Tim Av Off</i>	Select <i>mV</i>
Select RANGE	Select UNITS
Select <i>Aut 1 Rng up</i>	Select <i>Hz (sec)</i>

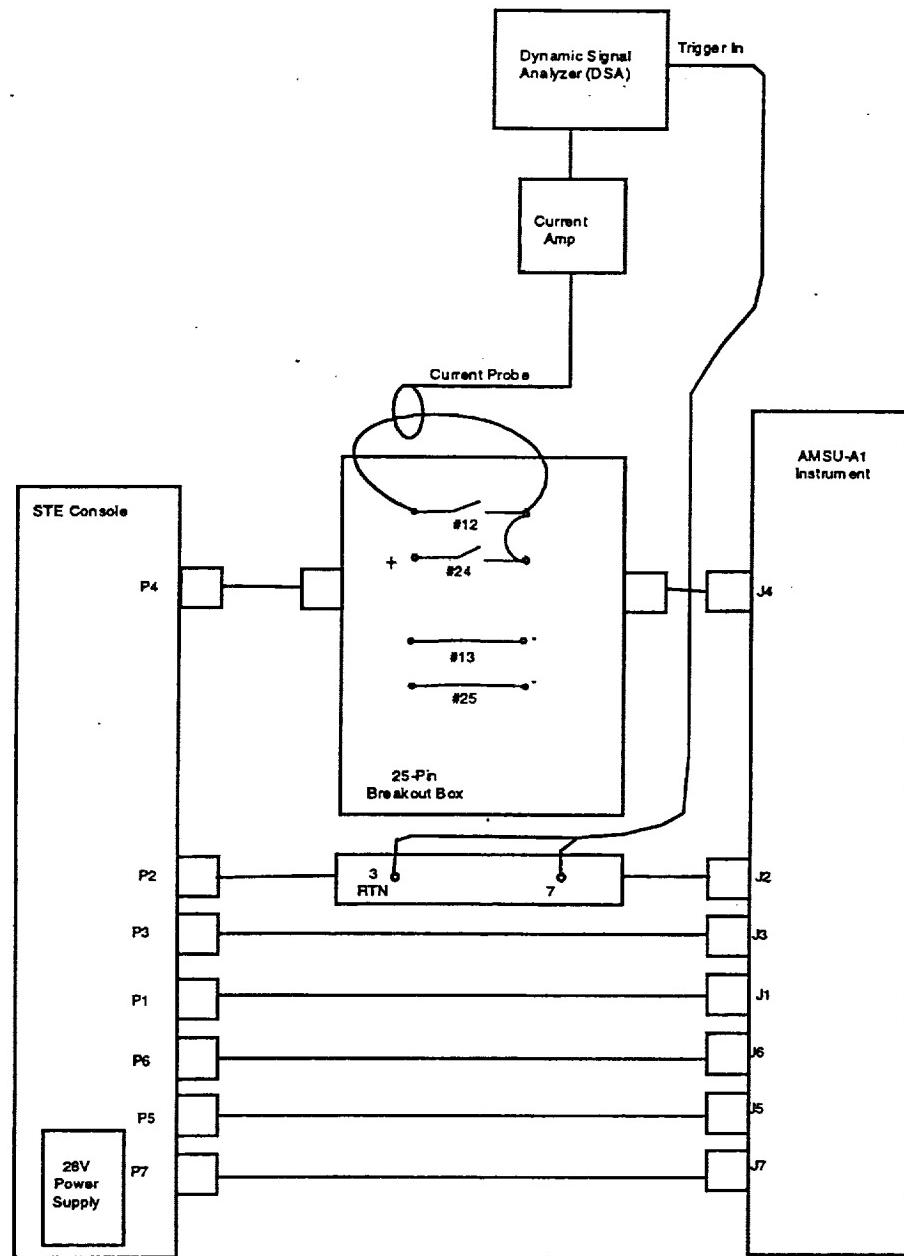


Figure 17. +10V Interface Bus Operating Power and Ripple Current Measurements Test Setup

3. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
4. Acquire 8 seconds of data by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor back ON. The cursor will appear at the highest peak. Make a plot of this display.
6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:

Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276  $\mu$ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

#### **3.2.4.2.5 Power input test for LPT.** For LPT, test the power input as follows:

1. Configure the unit and test equipment as indicated in Figure 18.
2. Turn the unit ON as described in 3.2.3.5. Set the STE power supply voltage at  $28.00 \pm 0.05$  Vdc using 25-pin breakout box and DVM #1.

#### **NOTE**

Do not proceed without successful completion of step 2.

3. Record the voltage from DVM #1 and current in Amps from STE current meter on TDS 7.

#### **3.2.4.3 Clock, commands, and data system test.** This procedure verifies the clock signal, the commands, and the data requirements specified in S-480-80, GIIS IS-3267415, and UIIS IS-2617547.

##### **3.2.4.3.1 Test sequence.** The test sequence shall be as follows:

- a. Clock signals verification
- b. Commands and Digital-B telemetry verification
- c. Data output verification
  - (1) Digital-A
  - (2) Analog telemetry
  - (3) Test points
- d. GSE modes.

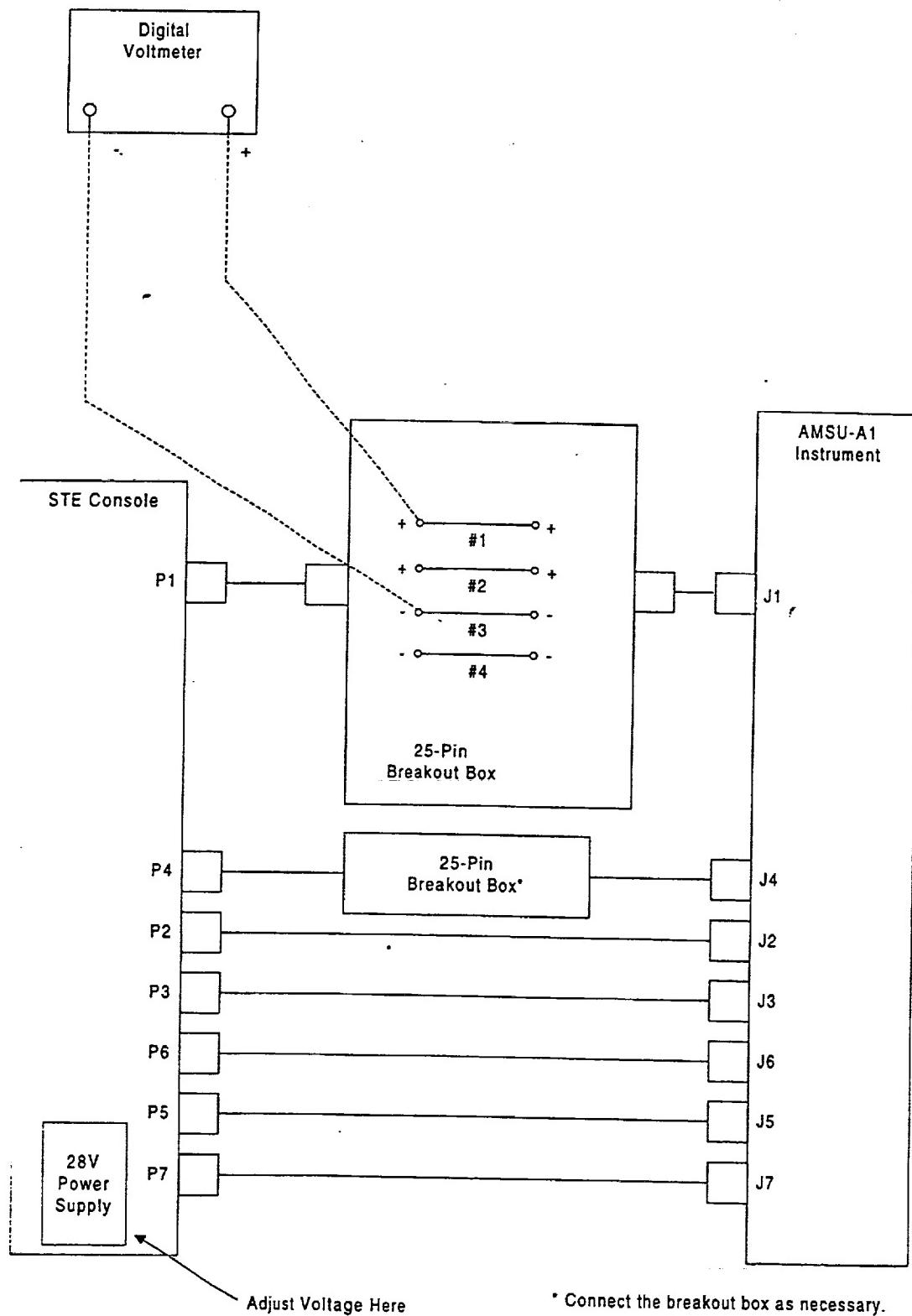


Figure 18. +28 V Main Load Bus Test Setup (For LPT Only)

**3.2.4.3.2 Clock signals test.** The following items shall be tested to verify the clock signals. Refer to Figure 19 for graphical representation of these pulses.

- a. 1.248 MHz clock
- b. 8 seconds frame pulse
- c. A1 select pulse
- d. C1 shift pulse

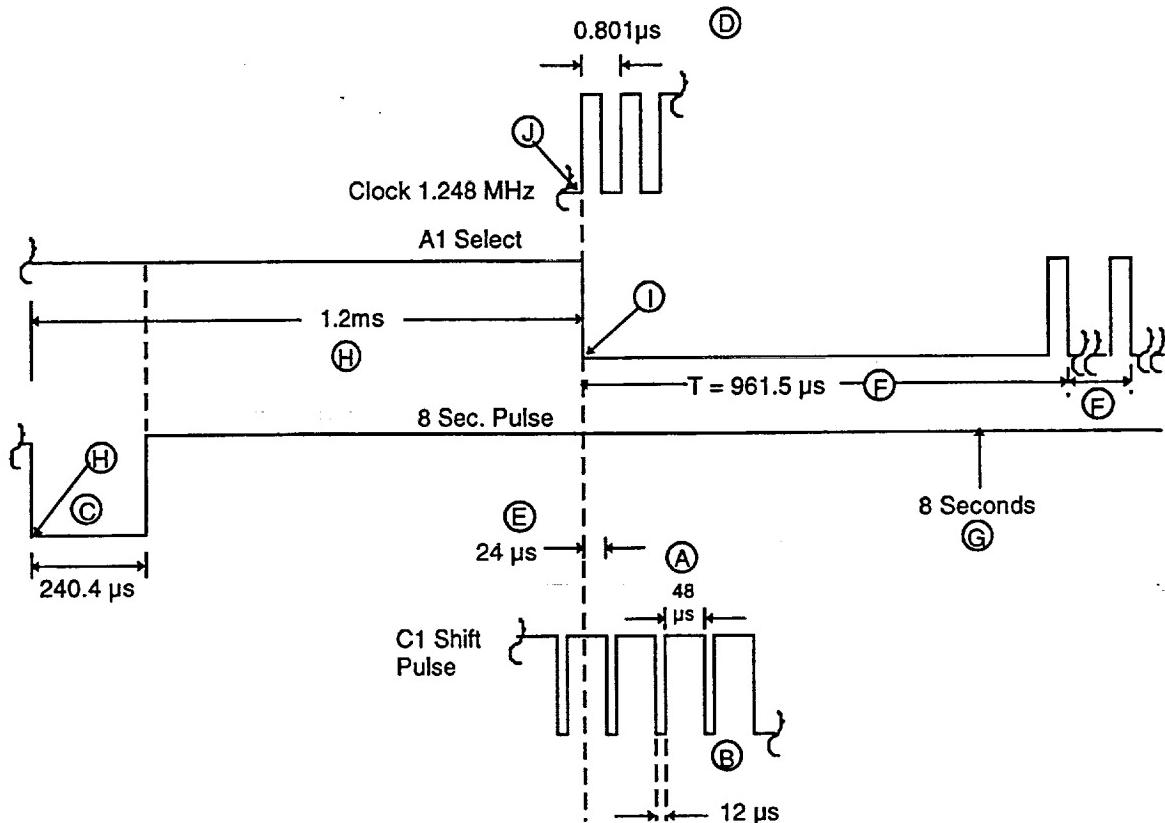


Figure 19. Clock Pulses Timing and Synchronization

**3.2.4.3.2.1 1.248 MHz synchronization clock.** Perform the following procedures:

1. Configure the unit and the test equipment as indicated in Figure 20.
2. Connect CHANNEL-1 of the oscilloscope to the 1.248 MHz clock signal as shown in Figure 20.
3. Turn the unit ON as described in 3.2.3.5.

#### NOTE

Do not proceed without successful completion of step 3.

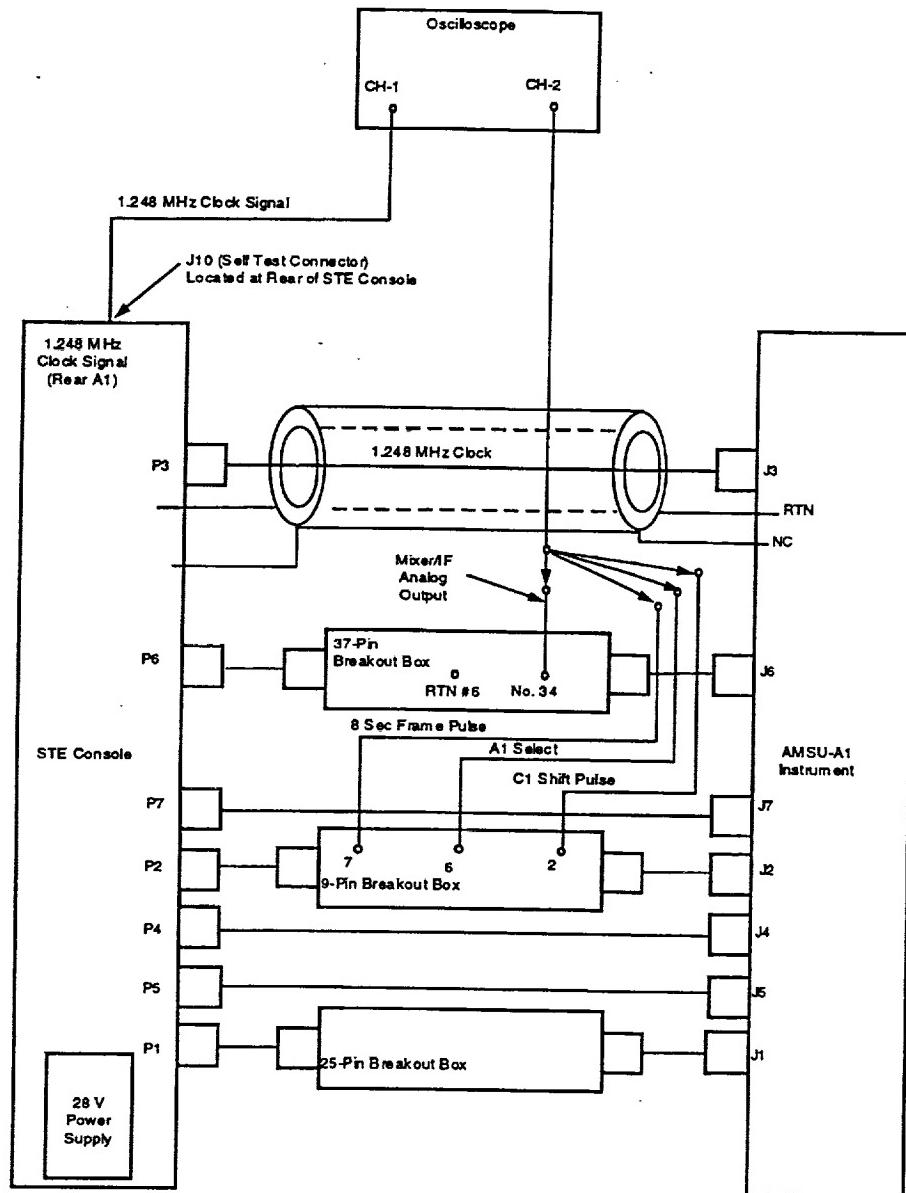


Figure 20. Clock Signals Test Setup

4. Using the oscilloscope, measure the 1.248 MHz clock signal. Record the data and attach the photograph or plot on TDS 8.

**3.2.4.3.2.2 C1 shift pulse verification.** Connect CHANNEL-2 of the oscilloscope to Pin 2 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 9.

**3.2.4.3.2.3 A1 select pulse verification.** Connect CHANNEL-2 of the oscilloscope to Pin 6 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 10.

**3.2.4.3.2.4 8-seconds frame sync pulse verification**

1. Connect CHANNEL-2 of the oscilloscope to Pin 7 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 11. (Record of "C" timing only, is required.)
2. Turn the unit OFF by executing the softkey command [11] MODULE TOTALLY OFF to OFF. Leave both breakout boxes in place.

**3.2.4.3.2.5 Synchronization signal relationship.** The following synchronization signal relationship shall be verified.

- a. A1 select pulse and the 8-second frame sync pulse
  1. With the unit off, configure the unit and the test equipment as indicated in Figure 21.
  2. Connect CHANNEL-1 of the oscilloscope to the breakout box, Pin 6 (A1).
  3. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
  4. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 12.
  5. From the photograph or plot, verify the synchronization as described in TDS 12. Record pass or fail.
- b. A1 select pulse and C1 shift pulse
  1. Connect CHANNEL-2 of the oscilloscope to the breakout box Pin 2 (C1 shift pulse).
  2. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
  3. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 12, sheet 2.
  4. From the photograph or plot, verify the synchronization as described in TDS 12, sheet 2. Record pass or fail.
- c. A1 select pulse and 1.248 MHz clock.
  1. Connect CHANNEL-2 of the oscilloscope to the clock connector located at the rear of the STE.
  2. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
  3. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 13.

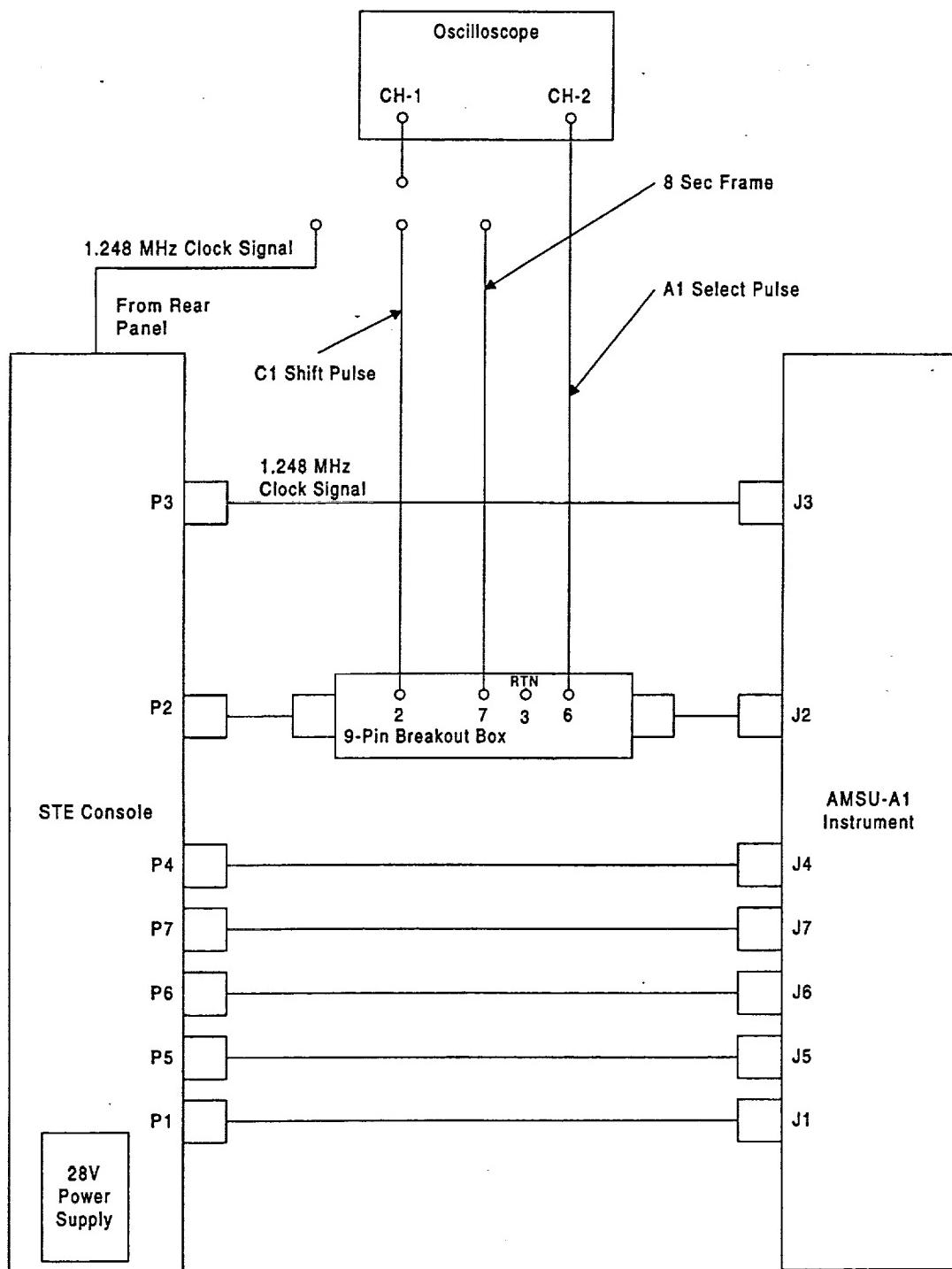


Figure 21. Synchronization Signal Relationships Test Setup

4. From the photograph or plot, verify the synchronization as described in TDS 13. Record pass or fail.

**3.2.4.3.3 Commands and digital-B telemetry test.** Commands and digital-B telemetry shall be verified in accordance with the following paragraphs.

**3.2.4.3.3.1 Module totally off.** Commands and digital-B telemetry, with the module totally off, shall be tested as follows:

1. Turn the unit on as follows:
  - a. Press [12] POWER ON (from 1st screen).
  - b. Press [2] MONITOR ONLY (from 1st screen)
  - c. Press [14] COMMANDS (from 2nd screen)

Verify the screen displays the default parameters below.

COMMANDS				
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO	[17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1	[18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO	[20]
POWER [4] ON				

2. From the Commands Menu, execute command [11] MODULE TOTALLY OFF to OFF mode.
3. Wait at least 18 seconds, then verify that the following events are in effect:
  - a. [11] MODULE TOTALLY OFF = OFF
  - b. [12] SCANNER A1-1 POWER = OFF.
  - c. [13] SCANNER A1-2 POWER = OFF.
  - d. [10] SURVIVAL HEATER POWER = OFF

Antenna reflectors for A1-1 and A1-2 pointing toward the warm load.

4. Record the above observations on TDS 14.

**3.2.4.3.3.2 Survival heater power ON/OFF command.** The survival heater power ON/OFF command shall be tested as follows:

1. Execute command [10] SURVIVAL HEATER POWER to ON mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Execute command [10] SURVIVAL HEATER to OFF mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.

**3.2.4.3.3.3 Module power connect command.** The module power connect command shall be tested as follows:

1. Execute command [9] MODULE POWER to CONNECT mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Verify that the current at the STE power supply is 0.5 to 4.3 Amperes. Record this information on TDS 14.

**3.2.4.3.3.4 Phase lock loop (PLL) PLLO No. 1 / PLLO No. 2.** The PLL PLLO No. 1/PLLO No. 2 command shall be tested as follows:

1. Execute [18] PLL POWER = PLLO#2  
Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Execute [18] PLL POWER = PLLO#1  
Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.

**3.2.4.3.3.5 Scanner commands verification.** The scanner commands shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS				
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1	[18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO	[20]
POWER [4] ON				

- Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 15.
2. Execute. [12] SCANNER A1-1 POWER = OFF  
[13] SCANNER A1-2 POWER = OFF
- Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 16.
3. Execute. [12] SCANNER A1-1 POWER = ON  
[13] SCANNER A1-2 POWER = ON

Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 17.

**3.2.4.3.3.6 Scanner position commands (A1-1 and A1-2) verification.** Verify scanner position command operation as follows:

#### NOTE

Verification of the scan position is applicable to both antenna reflectors located at the high and low bays of the instrument (A1-1 and A1-2).

1. Execute: [14] ANTENNA WARM CAL POS = YES  
[17] ANTENNA FULL SCAN MODE = NO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

2. Execute: [15] ANTENNA IN COLD CAL POS = YES  
[14] ANTENNA WARM CAL POS = NO

Execute: [19] COLD CAL POS MSB = zero  
[20] COLD CAL POS LSB = one

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

3. Execute: [19] COLD CAL POSITION MSB = ONE  
[20] COLD CAL POSITION LSB = ZERO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

4. Execute: [19] COLD CAL POSITION MSB= ONE  
[20] COLD CAL POSITION LSB= ONE

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

5. Execute: [19] COLD CAL POSITION MSB= ZERO  
[20] COLD CAL POSITION LSB= ZERO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

6. Execute: [16] ANTENNA IN NADIR POSITION = YES  
[15] ANTENNA IN COLD CAL POS = NO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

7. Execute: [14] ANTENNA WARM CAL POS = YES

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

**3.2.4.3.4 Digital-A data output verification.** The following items shall be tested to verify the digital-A data output:

- a. Full scan (3.2.4.3.4.1)
- b. Warm load (3.2.4.3.4.2)
- c. Cold cal (3.2.4.3.4.3)
- d. Nadir (3.2.4.3.4.4).

For each of the above scan modes, the following parameters will be subject to pass/fail criterion:

- [I] Sync. sequence
- [II] Unit I.D. and serial number
- [III] Digital-B serial data verification
- [IV] Reflector positions

[V] Radiometric data (scene data)

Radiometric data shall be obtained from two channels only, Channels 9 and 3. Channel 9 is physically located at the high bay of the sensor (A1-1 location) and Channel 3 is located at the lower bay of the sensor (A1-2 location).

[VI] Temperature sensors.

For the cold cal mode, reflector position [IV], verify the following:

- (a) Cold cal position with MSB=1 and LSB=0
- (b) Cold cal position with MSB=0 and LSB=1
- (c) Cold cal position with MSB=1 and LSB=1.

NOTE

The calibration data for the selected AMSU-A1 sensor serial number is required prior to the start of this test. Refer to 3.2.4.3.4.1.

**3.2.4.3.4.1 Full scan mode.** The digital-A data output in full-scan mode shall be tested as follows:

1. Turn the unit on. Execute commands as necessary to obtain the following configuration:

COMMANDS				
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES	[17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1	[18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO	[20]
POWER [4] ON				

2. Obtain a full printout (9 pages) of all the parameters ([I] through [VI]) described above, by touching the PRINT [3] FULL touch area. The computer will start printing all 9 pages of data.
3. Label 1st page of 9 pages with the unit serial number and the paragraph number corresponding to this test.

(I), (II), and (III) Sync, Unit ID, and Digital-B Data

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 19. Record pass or fail.

[IV] Reflector position

NOTE

To verify the following steps, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS.

5. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 20. For S/N 105 and up, verify that position values are within  $\pm 10$  counts from requirement provided in TDS 6, AE-26002/1.

[V] Radiometric data

6. Using the individual printout, verify that the data are within the values specified on TDS 21. Record pass or fail.

[VI] Temperature sensors

7. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 22 (sheets 1 and 2). Record pass or fail.

**3.2.4.3.4.2 Warm cal mode.** The digital-A data output, in warm-cal mode shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

[I], [II], and [III] Sync, Unit ID, and Digital-B Data

2. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 23. Record pass or fail.

**NOTE**

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

[IV] Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 24. For S/N 105 and up, verify that position values are within  $\pm 10$  counts from requirement provided in TDS 6, AE-26002/1.

[V] Radiometric data

4. Using the individual printout, verify that the data are within the values specified on TDS 25. Record pass or fail.

[VI] Temperature sensors

5. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 26 (sheets 1 and 2). Record pass or fail.

**3.2.4.3.4.3 Cold cal mode.** The digital-A data output, in cold-cal mode, shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	YES [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

I, II and III Sync, Unit ID, and Digital "B" data

2. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 27. Record pass or fail.

NOTE

To verify the following steps, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS.

IV Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout for steps 4a, 4b, 4c, and 4d. For S/N 105 and up, verify that position values are within  $\pm 10$  counts from requirement provided in TDS 6, AE-26002/1.
4. To test the cold cal reflector position, perform the following substeps:
  - a. Using AE-26157; select reflector position screen, execute PRINT [2] SCREEN ONLY, and attach the data to TDS 28. Verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 28. For S/N 105 and up, verify that position values are within  $\pm 10$  counts from requirement provided in TDS 6, AE-26002/1.
  - b. Execute commands [19] COLD CAL POSITION MSB to 0 and [20] COLD CAL POSITION LSB to 1. Repeat substep a. then proceed to substep c.
  - c. Execute commands [19] COLD CAL POSITION MSB to 1 and [20] COLD CAL POSITION LSB to 0. Repeat substep a., then proceed to substep d.
  - d. Execute commands [19] COLD CAL POSITION MSB to 1 and [20] COLD CAL POSITION LSB to 1. Repeat substep a., then proceed to substep e.
  - e. Execute commands [19] COLD CAL POSITION MSB to 0 and [20] COLD CAL POSITION LSB to 0.

V Radiometric data

5. Using the individual printout, verify that the data are within the values specified on TDS 29. Record pass or fail.

[VII] Temperature sensors

6. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 30 (sheets 1 and 2). Record pass or fail.

**3.2.4.3.4.4 Nadir cal mode.** The digital-A data output, in nadir-cal mode, shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

		COMMANDS		
[9]	MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10]	SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	YES [16]
[11]	MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12]	SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13]	SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14]	ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
	POWER [4] ON			

[II], [III] and [III] Sync, Unit ID, and Digital "B" data

2. Using the individual printout, verify that elements 0001 through 0008 are within the required values specified in TDS 31. Record pass or fail.

NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

[IV] Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 24. For S/N 105 and up, verify that position values are within  $\pm 10$  counts from requirement provided in TDS 6, AE-26002/1

[V] Radiometric data

4. Using the individual printout, verify that the data are within the values specified on TDS 32. Record pass or fail.

[VI] Temperature sensors

5. Using the individual printout, verify that the elements 1090 through 1180 are within the values specified on TDS 33 (sheets 1 and 2). Record pass or fail.

**3.2.4.3.5 Analog telemetry test.** The purpose of this test is to verify that the 26 analog telemetry signals are within requirements. The purpose of the analog telemetry signals is to provide information about the functionality of the subsystems during normal operation of the unit. The analog telemetry signals shall be verified in two ways: (1) by measuring the analog telemetry signals directly at the interfacing connector and (2) by use of the STE.

**3.2.4.3.5.1 Analog TLM signals measurements connector J6.** Measure analog TLM signals at connector J6 as follows:

1. Configure the unit and the STE as indicated in Figure 22. Verify that unit power is off prior to the installation of the breakout boxes. To turn the unit off, select the Commands Menu and execute command [9] MODULE POWER = DISCONNECT and POWER [4] OFF. Manually turn off the STE 28 V power supply located inside the STE console.
2. Turn the unit on as follows:
  - (a) Turn on the STE 28 V power supply.
  - (b) On the Commands Menu, execute: POWER [4] ON and [9] MODULE POWER = CONNECT. Verify the display is as follows.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

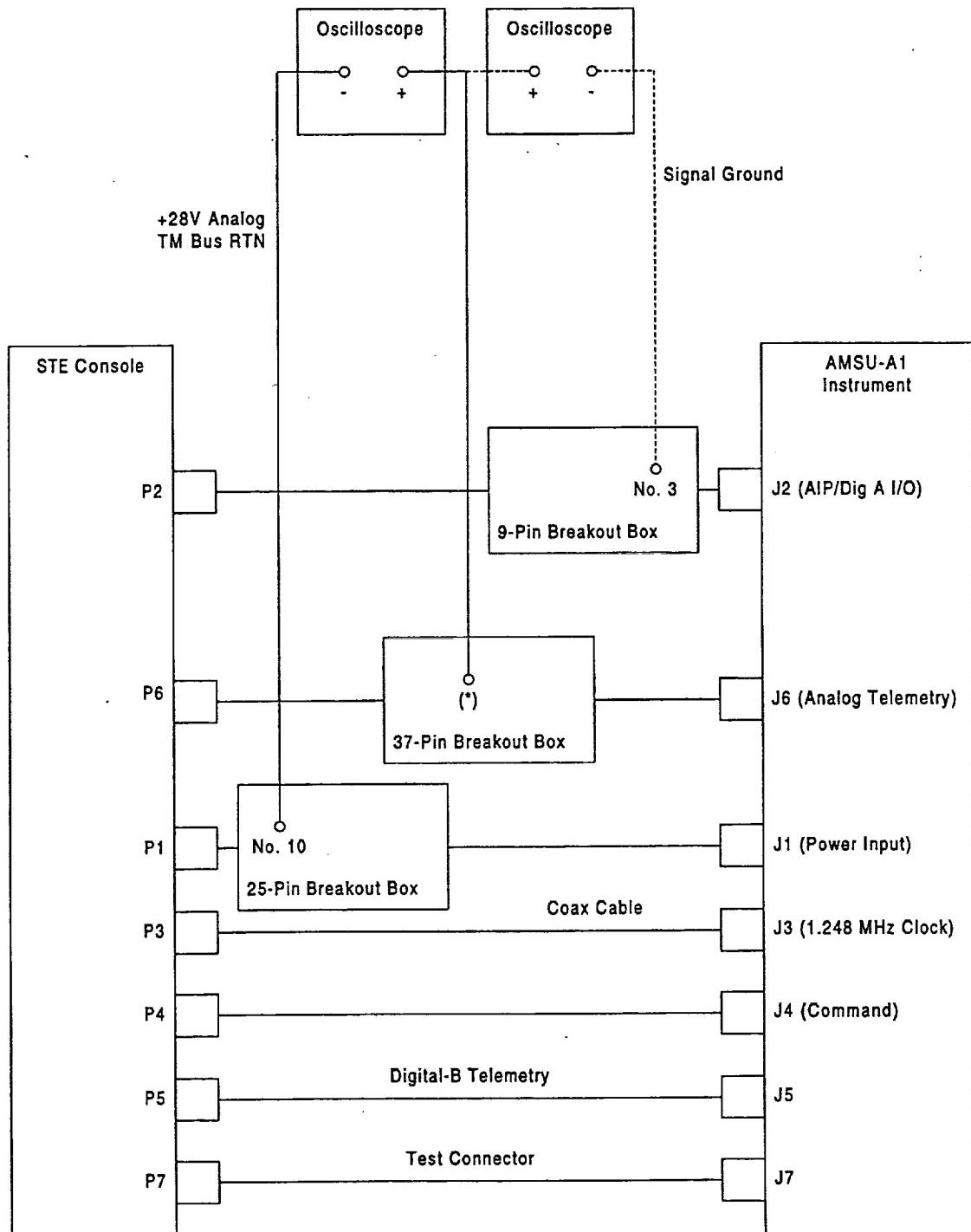
3. Using the "28 V Analog Telemetry Bus Return" (J1-10) as a reference ground, measure and record the six temperature sensor voltages in the order specified on TDS 34.
4. Using the "Signal Ground" (J2-03) as a reference ground, measure and record the remaining analog telemetry voltage levels in the order specified on TDS 34.
5. Leave the unit on in preparation for the next test.

**3.2.4.3.5.2 Analog TLM signal measurements using the STE.** Analog TLM signal measurements using the STE shall be taken as follows:

1. Using the individual printout, verify that the data matches the values specified on TDS 35. Record pass or fail.
2. Attach computer individual printout to TDS 35.

**3.2.4.3.6 Test point verification.** The purpose of this test is to verify the performance of the integrator and its associated clock pulses. Figure 2 shows the integration waveform and the clock signals. Test point verification consists of the following parameters:

- a. Integration/Hold and Dump Clock Signals. (3.2.4.3.6.1) (Time and amplitude)
- b. Integration Time (Analog Output). (3.2.4.3.6.2) (Time and amplitude for all 13 channels.)



(\*) For the measurements of the temperature sensor,  
use J1-10 as a ground, for the remaining analog signals  
use J2-3 as a reference ground.

Figure 22. Analog Telemetry Signal Verification Test Setup

**3.2.4.3.6.1 Integration/hold and dump clock signals.** The integration/hold and dump clock signals shall be tested as follows:

1. Referring to Figure 23, configure the oscilloscope as follows:
  - (a) Channel-2 to J7-06 integration/hold clock signal.
  - (b) Channel-1 to J7-24 dump signal clock.
  - (c) Channel-1 (shielded cable) to J7-05 (I/H and Dump RTN).
  - (d) Internal trigger mode to channel-1.
  - (e) Amplitude and Time optimized for best resolution.
2. Photograph or plot the oscilloscope display and attach the photograph or plot to TDS 36.
3. From the photograph or plot, measure time and amplitude for the integrate/hold and dump clock signals. Verify that the data obtained are within the requirements specified on TDS 36 and Figure 2.
4. Leave the equipment in place and the unit turned on in preparation for the next test.

**3.2.4.3.6.2 Integration time (analog outputs).** The analog outputs integration time shall be tested as follows:

1. Reconfigure the test equipment as indicated in Figure 24.
2. Connect the oscilloscope, channel-2 positive line to J7-XX of the 37-pin breakout box. Where: XX indicates the pinout distribution for all the 13 channels as shown in Table III.
3. Start with the first channel of the above list. Adjust the oscilloscope for best amplitude and time resolution. The displayed signals should look like Figure 2.
4. Photograph or plot the display and attach it to the corresponding TDS (TDSs 37 through 43).
5. From the photograph or plot, measure the integration time and the amplitude. Verify that the data obtained is within the requirements specified in TDSs 37 through 43.
6. Repeat steps 2 through 5 to measure the integration time (analog output) for the remaining channels.
7. Leave the unit turned on and the test equipment in place in preparation for the next test.

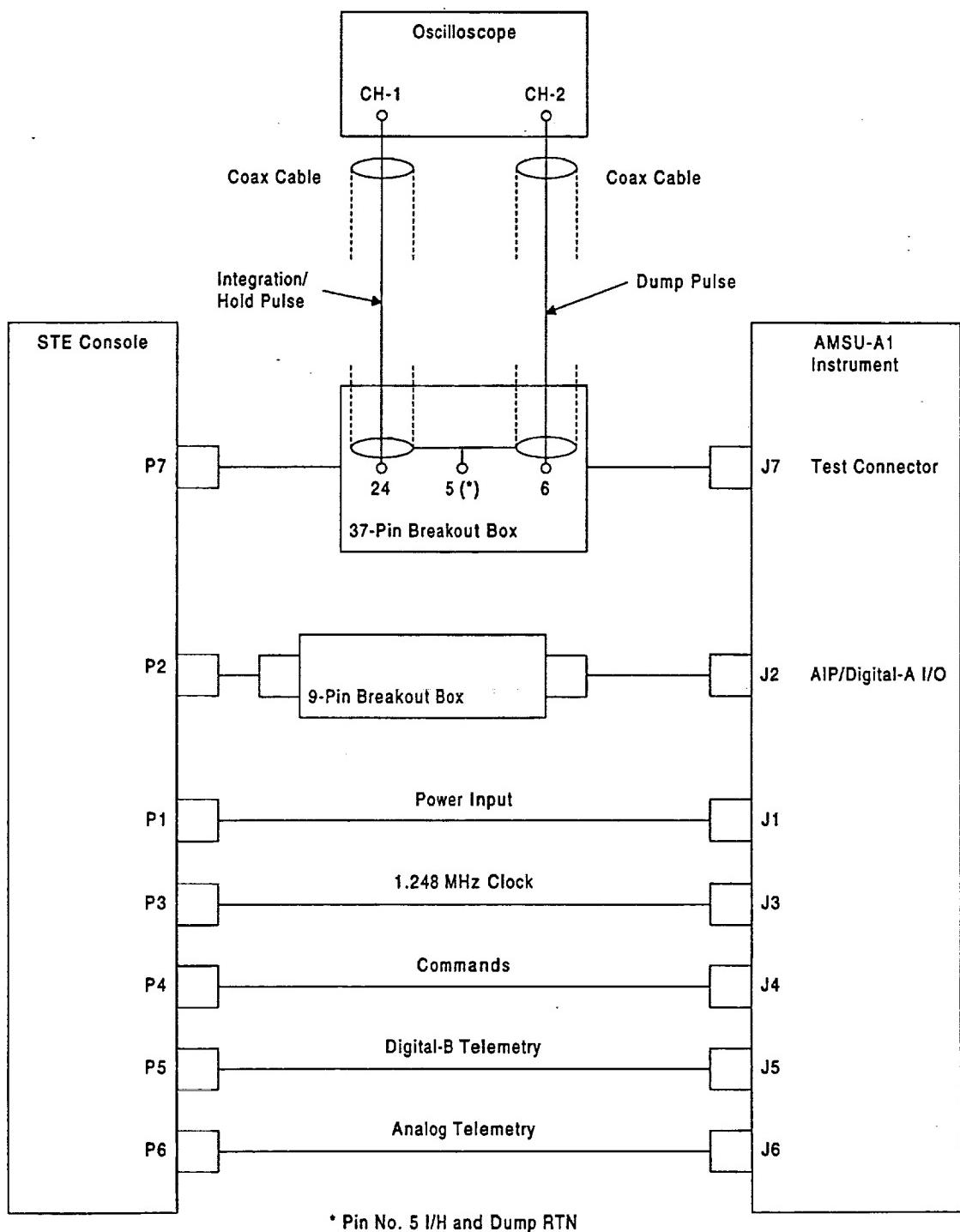
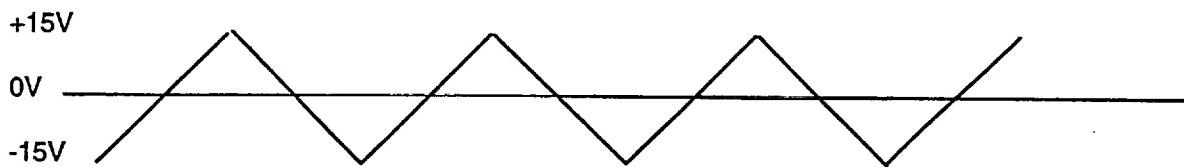


Figure 23. Integration/Hold and Dump Signals Verification Test Setup

**3.2.4.3.6.3 PLLO No. 1 verification.** The PLLO No. 1 shall be verified as follows:

1. Reconfigure the oscilloscope as indicated in Figure 25. Connect the oscilloscope channel-1 to J7-22 (PLLO No. 1).
2. From the Commands Menu of the STE, verify that the PLLO is selected in PLLO No. 1 as follows:  
**PLL POWER = PLLO#1 [18]**
3. For S/N 101 - S/N 104, adjust the oscilloscope for best amplitude and time base. If the PLLO is locked properly, the oscilloscope will display a dc-voltage level of -15 to +15 V. Record the voltage level on TDS 44. Record PASS. (Any dc level recorded is considered PASS). If the PLLO is not locked properly, the scope will display a waveform similar to this:



Record FAIL on TDS 44. Discontinue the test until the deficiency is corrected.

4. For S/N 105 and above, if the PLLO is locked properly, the oscilloscope will display a dc-voltage =  $4.0 \pm 1$  V. If the PLLO is not locked, the oscilloscope will display a dc-voltage of  $+0.61 \pm 0.30$  V. If PLO is OFF, the oscilloscope will display a dc-voltage of  $0.0 \pm 0.2$  V. If the PLLO is trying to acquire lock, the oscilloscope will display a various dc level. Record the voltage level on TDS 44.

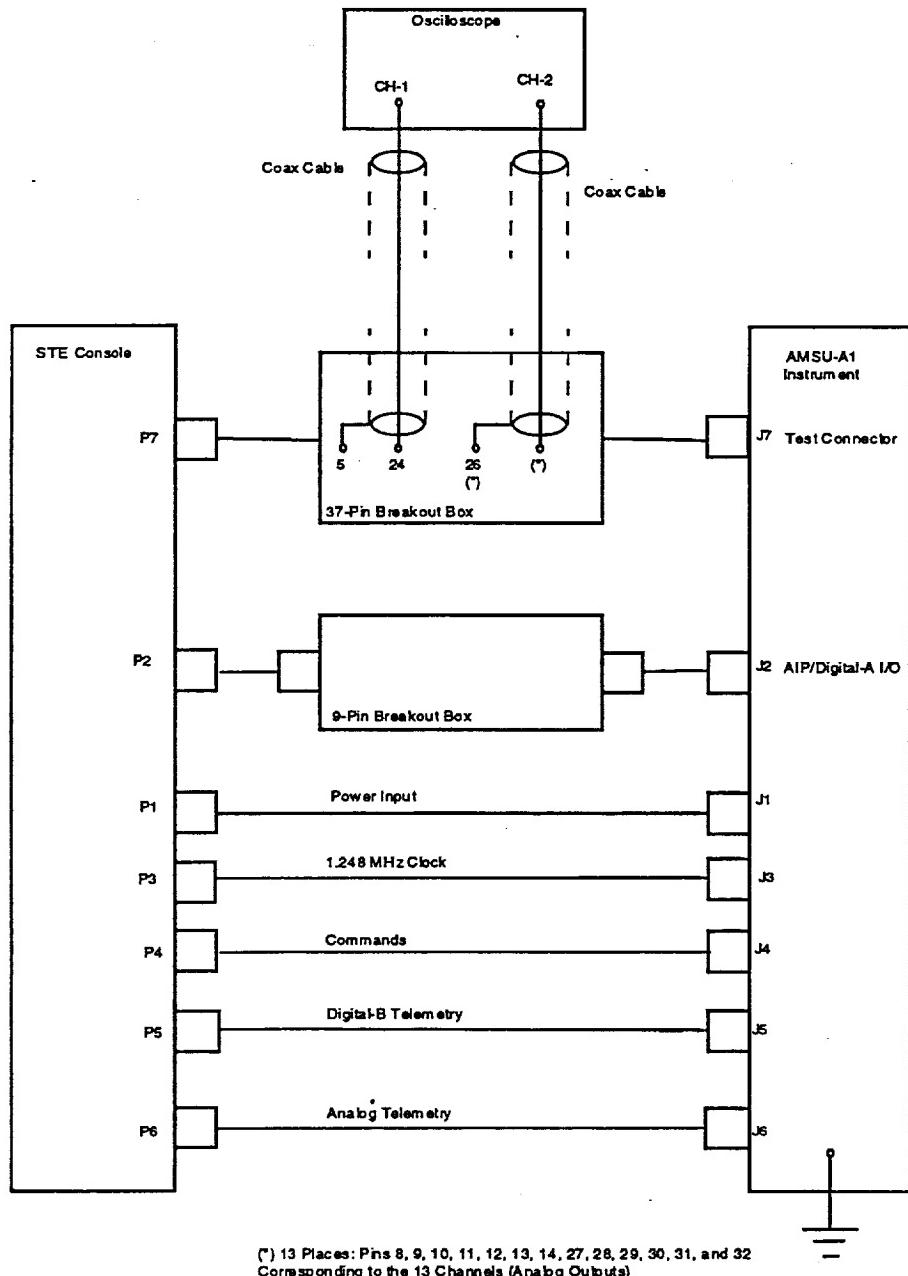


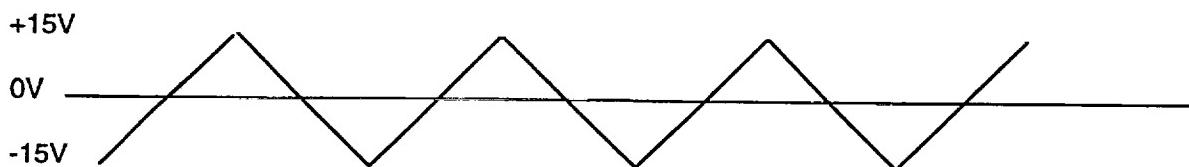
Figure 24. Integration Time (Analog Output) Verification Setup

Table III. Location and Frequency of Channel 3 through 15 Analog Outputs

Breakout Box Pin Location	Channel Distribution	Frequency
J7-08	Channel-03 Analog Output	50.3 GHz
J7-09	Channel-04 Analog Output	52.80 GHz
J7-10	Channel-05 Analog Output	53.596 GHz
J7-11	Channel-06 Analog Output	54.400 GHz
J7-12	Channel-07 Analog Output	54.940 GHz
J7-13	Channel-08 Analog Output	55.500 GHz
J7-14	Channel-09 Analog Output	57.290 GHz PLLO
J7-27	Channel-10 Analog Output	57.290 GHz PLLO
J7-28	Channel-11 Analog Output	57.290 GHz PLLO
J7-29	Channel-12 Analog Output	57.290 GHz PLLO
J7-30	Channel-13 Analog Output	57.290 GHz PLLO
J7-31	Channel-14 Analog Output	57.290 GHz PLLO
J7-32	Channel-15 Analog Output	89.000 GHz

**3.2.4.3.6.4 PLLO No. 2 verification.** The PLLO No. 2 shall be verified as follows:

1. Reconfigure the oscilloscope as indicated in Figure 25. Connect the oscilloscope channel-1 to J7-03 (PLLO No. 2).
2. Select the PLLO No. 2 unit by executing the following command:  
**[18] PLL POWER = PLLO#2**
3. For S/N 101 - S/N 104, adjust the oscilloscope for best amplitude and time base. If the PLLO is locked properly, the oscilloscope will display a dc-voltage level of -15 to +15 V. Record the voltage level on TDS 44. Record pass. (Any dc level recorded is considered PASS). If the PLLO is not locked properly, the scope will display a waveform similar to this:



Record FAIL on TDS 44. Discontinue the test until the deficiency is corrected.

4. For S/N 105 and above, if the PLLO is locked properly, the oscilloscope will display a dc-voltage =  $4.0 \pm 1$  V. If the PLLO is not locked, the oscilloscope will display a dc-voltage of  $+0.61 \pm 0.30$  V. If PLO is OFF, the oscilloscope will display a dc-voltage of  $0.0 \pm 0.2$  V. If the PLLO is trying to acquire lock, the oscilloscope will display a various dc level. Record the voltage level on TDS 44.

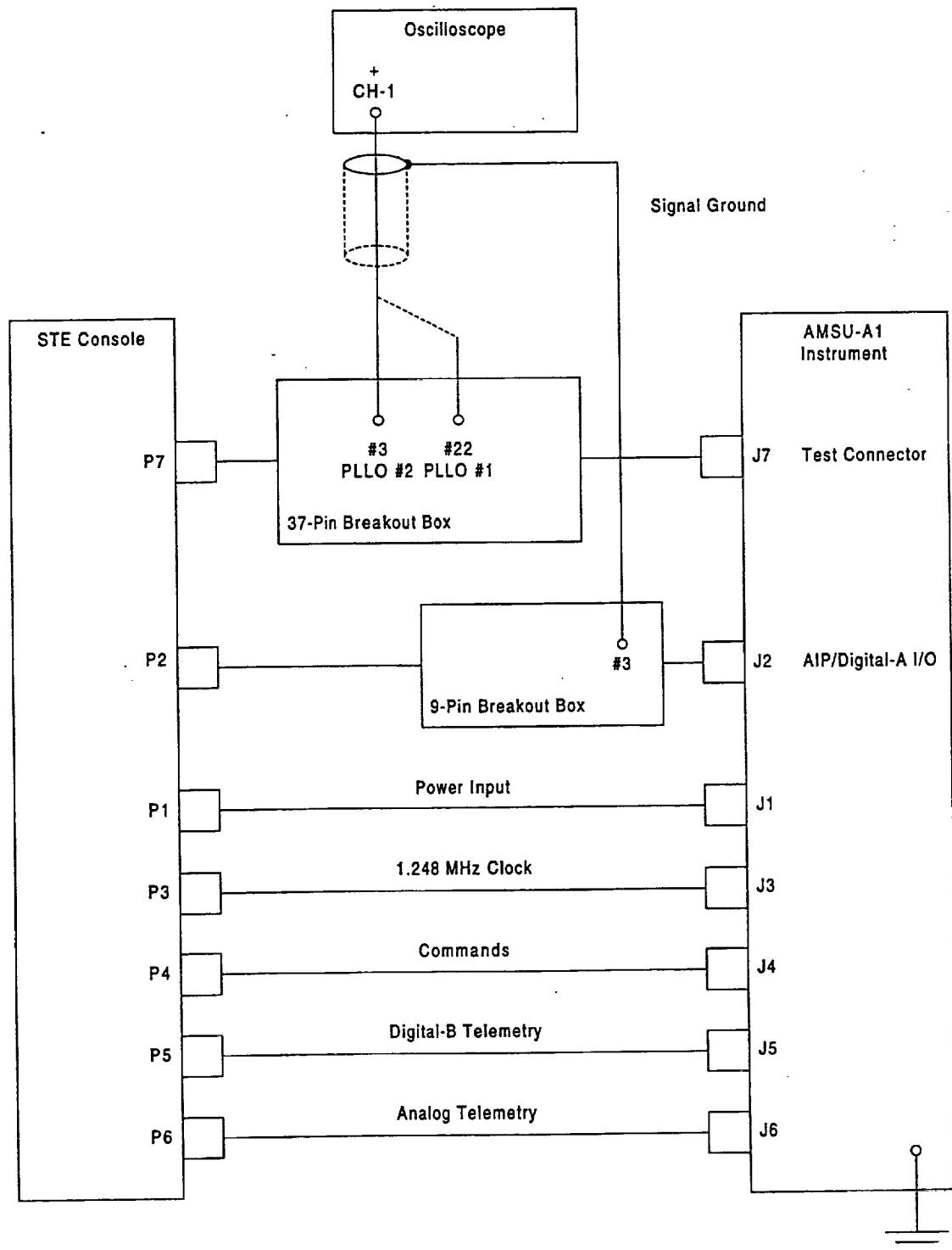


Figure 25. PLLO No. 1/No. 2 Test Setup



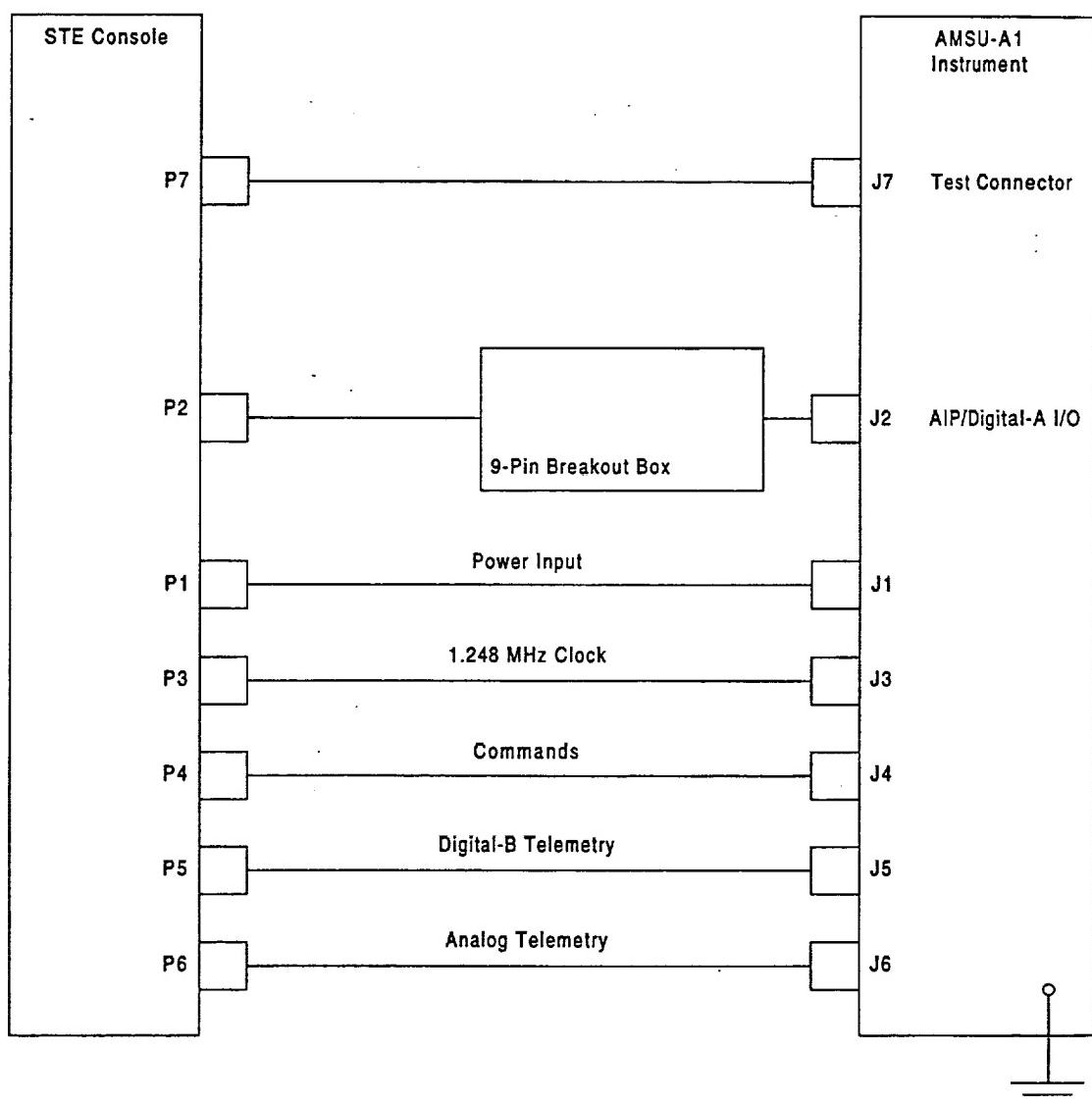


Figure 26. GSE Modes Verification Test

2. Turn the unit on. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON		RETURN	[1]

Wait at least 18 seconds until the sending commands are acknowledged by the STE. At this point, the unit should be in the NO MODE with the STE collecting data.

3. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:

- (a) On Commands Menu, press: RETURN [1].
- (b) On Main Menu, select: [10] SELF TEST.
- (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
- (d) Select corresponding GSE mode under test.
- (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

#### 3.2.4.3.7.2 GSE Mode-1. The GSE mode-1 shall be tested as follows:

##### I, II, and III Sync, Unit ID, and Digital-B

1. Using the printout, verify that elements 1 through 8 are within the values specified on TDS 45. Record pass or fail.

##### NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

##### IV Reflector Positions

2. Using the individual printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

##### V Radiometric Data

3. Using the individual printout, verify that the radiometric data are within the values specified on TDS 47.

##### VI Temperature Sensors

4. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 48 (sheets 1 and 2). Record pass or fail.

**3.2.4.3.7.3 GSE Mode-2.** The GSE Mode-2 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
  - (a) Return to the Main Menu by pressing: RETURN [1].
  - (b) On Main Menu, select: [10] SELF TEST.
  - (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
  - (d) Select GSE mode 2 at the prompt.
  - (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

**NOTE**

To verify the following step, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

**[IV] Reflector Positions**

2. Using Pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

**3.2.4.3.7.4 GSE Mode-3.** The GSE Mode-3 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
  - (a) Return to the Main Menu by pressing: RETURN [1].
  - (b) On Main Menu, select: [10] SELF TEST.
  - (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
  - (d) Select GSE mode 3 at the prompt.

**NOTE**

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

**[IV] Reflector Positions**

2. Verify that both A1-1 and A1-2 reflectors increment one step every eight seconds.

**3.2.4.3.7.5 GSE Mode-4.** The GSE Mode-4 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
  - (a) Return to the Main Menu by pressing: RETURN [1].

- (b) On Main Menu, select: [10] SELF TEST.
- (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
- (d) Select GSE mode 4 at the prompt.
- (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

**NOTE**

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

**[IV] Reflector Positions**

2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

**3.2.4.3.7.6 GSE Mode-5.** The GSE Mode-5 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
  - (a) Return to the Main Menu by pressing: RETURN [1].
  - (b) On Main Menu, select: [10] SELF TEST.
  - (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
  - (d) Select GSE mode 5 at the prompt.
  - (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

**NOTE**

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

**[IV] Reflector Positions**

2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

**3.2.4.3.7.7 GSE Mode-7.** The GSE Mode-7 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
  - (a) Return to the Main Menu by pressing: RETURN [1].
  - (b) On Main Menu, select: [10] SELF TEST.

- (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
- (d) Select GSE mode 7 at the prompt.
- (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

#### NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or he may use the 9 page full printout.

#### [IV] Reflector Positions

- 2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.
- 3. Set the STE to GSE MODE-0, failure to do so will cause the STE to produce faulty data when in normal mode. To enter GSE-MODE-0 into the computer:
  - (a) Return to the Main Menu by pressing: RETURN [1].
  - (b) On Main Menu, select: [10] SELF TEST.
  - (c) On Self Test Menu, select: [7] RUN GSE MODE.  
(The computer will prompt: Enter GSE mode {0 to 15}.)
  - (d) Select GSE mode 0.

**3.2.4.4 Radiometer functional test.** The purpose of the radiometer functional test is to verify the performance of the AMSU-A1 radiometer at the system level. This test shall consist of the following subtests:

- a. PLLO frequency measurements 3.2.4.4.1
- b. Relative NE $\Delta$ T measurements 3.2.4.4.2

**3.2.4.4.1 PLLO frequency measurements.** Measure the PLLO frequencies as follows:

- 1. Prepare the unit and the test equipment as indicated in Figure 27. Frequency verification for the receiver shall be performed on the following frequency (see Figure 28 for sample plot):  
(A1-1) Ch-9,10,11,12,13 and 14: 57.290344 GHz (PLLO No. 1 and PLLO No. 2)
- 2. Turn on the unit by using the procedure stated in 3.2.3.5. Allow not less than one hour for the equipment to warm-up and for the unit to stabilize.

On the Commands Menu, execute the following commands:

- (a) [14] ANTENNA WARM CAL POS = NO
- (b) [15] ANTENNA COLD CAL POS = NO

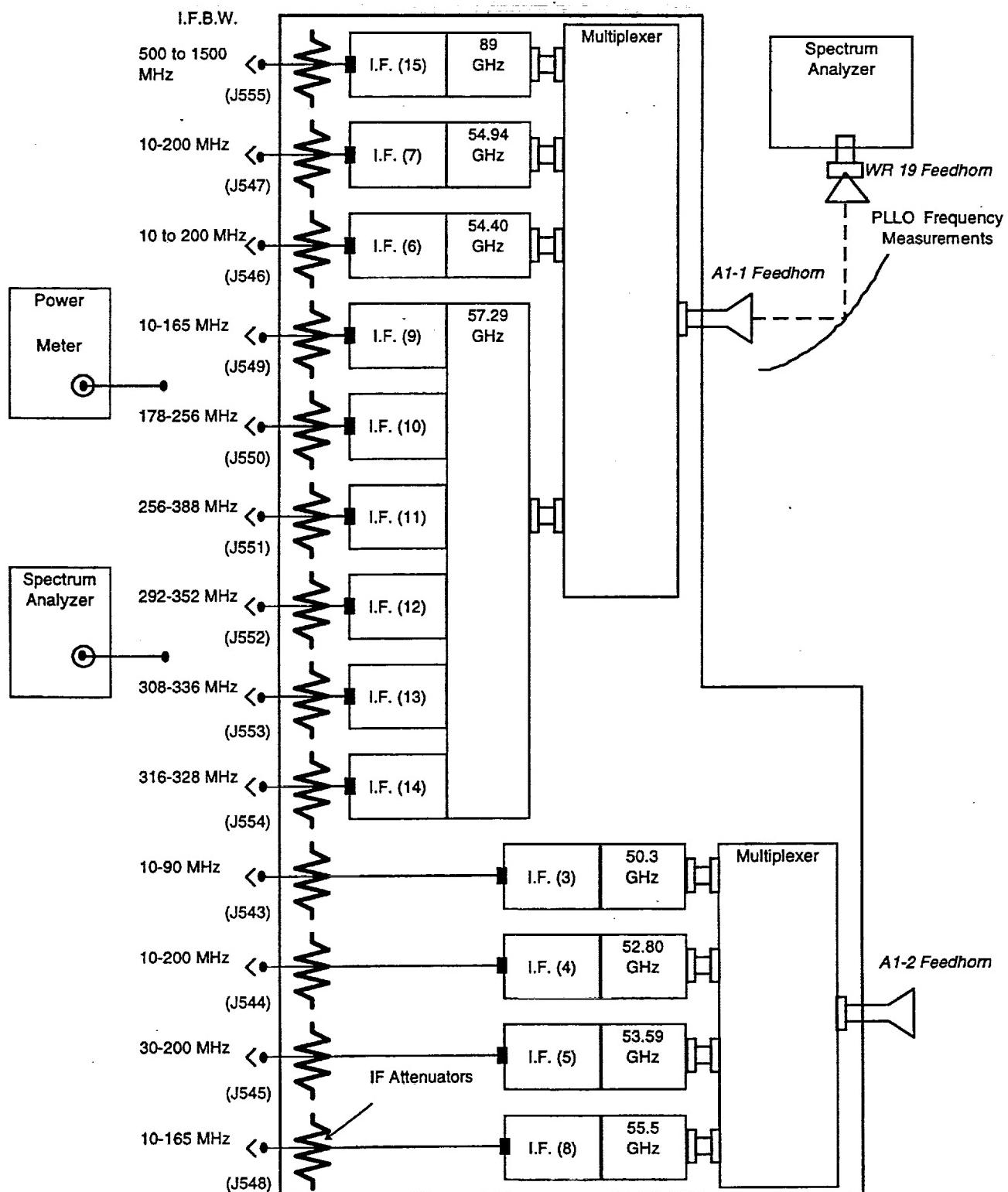


Figure 27. Configuration for RF Measurements

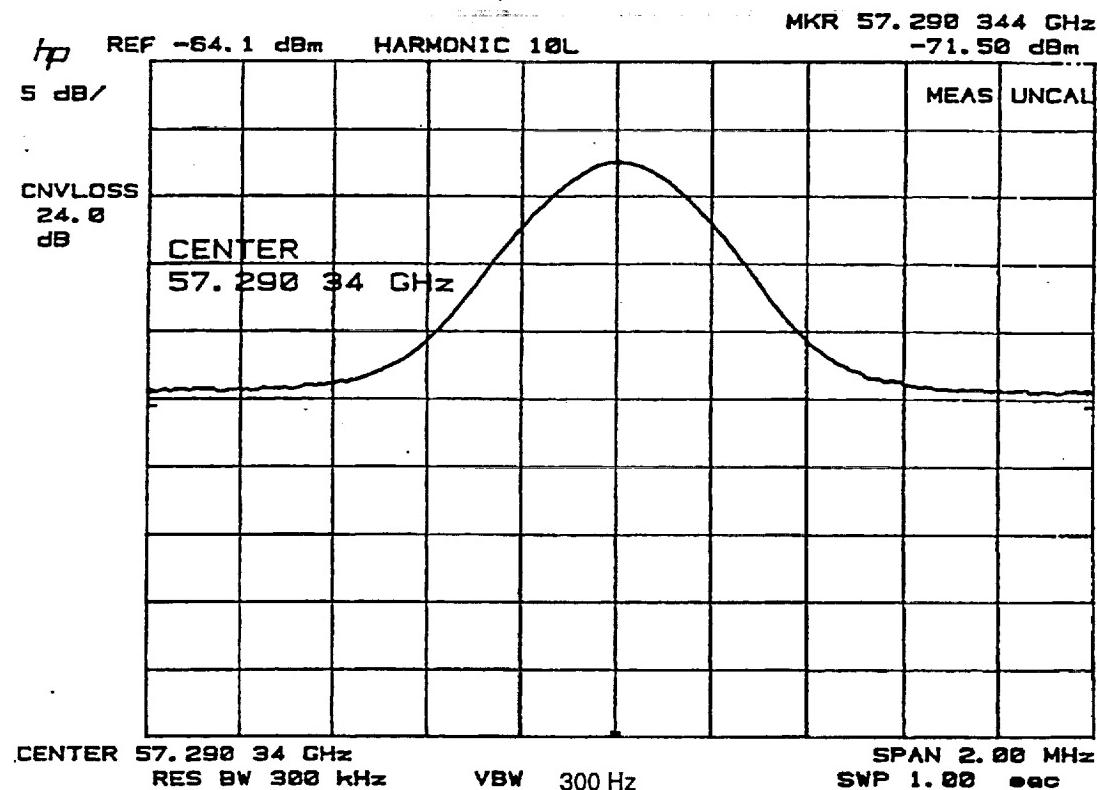


Figure 28. Sample Plot

- (c) [16] ANTENNA NADIR POS = YES
  - (d) [17] ANTENNA FULL SCAN MODE = NO
3. Record the measured frequencies on TDS 49, and plotter data. Repeat step 2 for PLLO No. 2.
  4. Remove the test equipment but leave the unit on in preparation for the next test.

**3.2.4.4.2 Relative radiometer NEAT measurements.** The purpose of this test is to perform a preliminary evaluation of the radiometer NEAT at a system level. Since the STE is not in the thermal-vacuum configuration, no temperature readings from the cold load are available. To compute the NEAT for this test, the temperature used for the cold load shall be LN<sub>2</sub> temperature.

The data obtained from this test are considered as relative NEAT and are to be used as a diagnostic tool to verify proper operation of the A/D converters and the spacecraft interface.

The equation to determine relative NEAT is as follows:

$$NEAT = \frac{[SD \times (Th - Tc)]}{M - N}$$

where:  
 SD = Standard deviation of 120 samples at hot temperature (warm load)  
 Th = Standard room temperature = 300 K  
 Tc = Standard LN<sub>2</sub> temperature = 80 K

M = Average of hot counts (120 samples)  
N = Average of cold counts (30 samples)

The sequence of testing shall be as follows:

- a. Equipment preparation and setup configuration
- b. Warm load radiometric data
- c. Cold load radiometric data
- d. Relative NEAT data collection

**3.2.4.4.2.1 Equipment preparation and setup configuration.** The equipment shall be set up as follows:

**WARNING**

The use of liquid nitrogen in a confined poorly ventilated area can cause asphyxiation and death due to a lack of oxygen (oxygen concentration below 20 percent). Accidental contact with liquid nitrogen will cause severe frostbite to the eyes or skin. When handling liquid nitrogen, personnel shall observe the following safety precautions:

- a. Ensure that the work area is well ventilated to prevent excessive gas buildup.
- b. To protect your eyes always wear a face shield or safety goggles (safety glasses without side shields do not provide adequate protection).
- c. To protect exposed skin, always wear an apron when pouring LN2 and whenever exposed to LN2, always wear a lab coat, gloves made for cryogenic work, cuffless trousers (worn outside the boots or shoes), and safety shoes.
- d. Do not fill target fuller than 1.0 inch from the top. Fill target at the floor level, away from unit.
- e. Do not move filled target without cover in place.

1. Configure the test equipment and the unit as indicated in Figure 29, except for the cold loads.
2. Execute commands as necessary to obtain the following configuration:

COMMANDS				
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO	[15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS =	NO	[16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO	[17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1	[18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO	[19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO	[20]
POWER [4] ON				

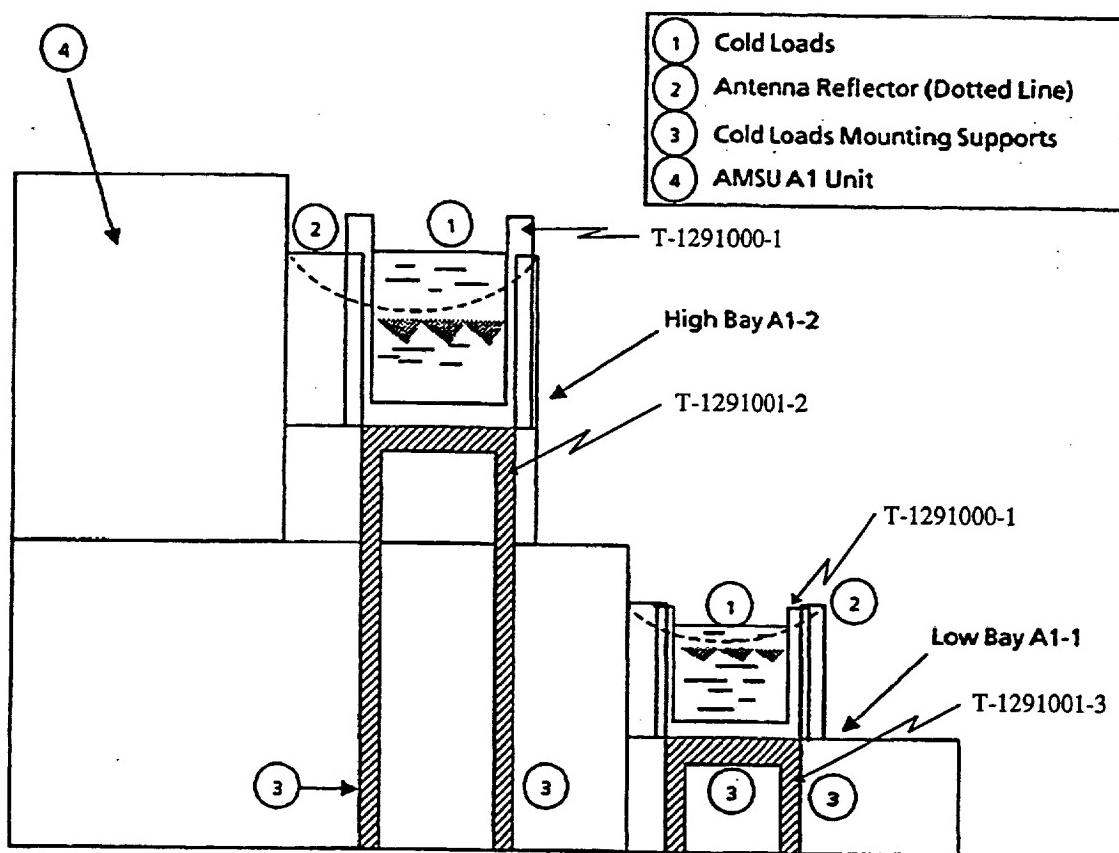


Figure 29. NEAT Setup Configuration

3. Allow 30 minutes for the unit to stabilize.

#### **3.2.4.4.2.2 Relative NEAT data collection.**

1. Return to the Main Menu by pressing [1] RETURN.
2. On the Main Menu, select [13] FUNCTIONAL TEST. (The STE will automatically command the unit to position the antenna reflector to the warm and cold loads as it is taking data.)
3. Wait approximately one minute to verify that the NEAT results are displayed on the screen. Obtain a printout. Repeat step 2 four times and obtain four additional printouts. Average NEAT from these five data points. Enter the values on TDS 50. Attach the printout to the data sheet.
4. Repeat steps 1, 2, and 3 for the PLL No. 2. Allow 30 minutes for the unit to stabilize after switching to PLL No. 2.
5. Remove the cold loads and associated hardware.

**3.2.4.5 Channel identification test.** The purpose of the channel identification test is to verify the proper final configuration /assembly of each radiometer channel from antenna input to the spacecraft interface.

1. Configure the unit and test equipment as shown in Figures 26 and 32.

2. Connect the STE to instrument using the following STE interface cables.
  - a. STE interface cable J1 (1356648-1)
  - b. STE interface cable J2 (1356648-2)
  - c. STE interface cable J3 (1356648-3)
  - d. STE interface cable J4 (1356648-4)
3. Follow the turn-on procedure per para. 3.2.3.5.
4. Enter the STE command "SCANNER A1-1 POWER." Wait 18 seconds before issuing the next command.
5. Enter the STE command "SCANNER A1-2 POWER." Wait 18 seconds before issuing the next command.
6. Enter the STE command "ANTENNA COLD CAL." Wait 18 seconds before issuing the next command. Both reflectors should scan to the cold calibration beam position.
7. Enter the STE command "[1] RETURN" to return to the monitor only screen.
8. Enter the STE command "[10] DIGITAL-A." The STE should now display the digital-A data screen shown in Figure 30. From this screen enter the STE command "[9] BEAM POSITION NN-ALL CHANNELS."
9. The STE then asks "ENTER BEAM POSITION NO (1 TO 30)." Enter "30" to show the radiometric counts data for channels 3-15. The STE should now display the radiometric data screen shown in Figure 31, except with a different set of count data.
10. Allow the instrument to stabilize for approximately 20 minutes. Enter the STE command "[2]" to obtain a screen only printout.
11. Configure the unit and test equipment as shown in Figure 32. Turn ON the sweeper and allow to warm up approximately 10 minutes. Make sure that the RF power is OFF during sweeper warm up.

**CAUTION**

Extreme care must be used when turning on RF power. When RF power is first applied the multiplier/gain horn should be approximately three to four feet from the unit. The RF power setting should be no greater than -20 dBm.

12. Set the sweeper frequency to  $50.35 \pm 0.01$  GHz and set the RF power level to -20 dBm. Position the multiplier/gain horn three to four feet from the instrument so that the A1-2 antenna and gain horn are approximately aligned (see Figure 32). Rotate the gain horn, if needed, to the vertical polarization position.
13. Turn ON the RF power making sure the power level is set to -20 dBm. Allow the multiplier to warm up approximately five minutes.
14. At the STE screen compare the radiometric data counts of channel 3 to the counts printed out at step 10. Enter the STE command "[2]" to obtain a screen only printout.
15. From the printouts obtained in steps 10 and 14, verify that the radiometric data counts for channel 3 have increased significantly, approximately 1000 or more, and that the other channels' data counts have remained relatively unchanged, less than 300 counts.
16. Record the counts difference on TDS 21 of channel 3 from the printouts obtained in steps 10 and 14 and attach printouts to TDS 21.
17. Repeat steps 12 through 16 for the frequencies and polarizations listed on TDS 21.

18. After all A1 channels have been identified, turn OFF the RF power. Return the reflectors to the warm cal position.
19. Turn the STE Q/Main and N/Pulse switches to OFF.
20. Turn the STE power supply panel main power switch OFF.

EOS	A1-03 E1.EXE;31 COLD CAL MODE			P15-JUN-98	09:36:59 SCAN NUMBER	34
[ 5 ]	SCIENCE DATA	ELEMENT	0000			
[ 6 ]	CONTROL/STATUS	ELEMENT	00			
[ 7 ]	ENGINEERING	ELEMENT	00			
[ 8 ]	DATA STREAM (64 VALUES)					
[ 9 ]	BEAM POSITION NN-ALL CHANNELS					
[ 10 ]	CHANNEL NN -ALL BEAM POSITIONS					
[ 11 ]	WARM CALIBRATE					
[ 12 ]	COLD CALIBRATE					
[ 13 ]	REFLECTOR POSITIONS					
[ 14 ]	TEMPERATURE DATA (16 VALUES)					
ENGR OK	POWER	ON	CHECKSUM IN 15A1 SA28	34SA29	47	
			SCREEN ONLY [ 2 ]	PRINT [ 3 ]	FULL	[ 1 ] RETURN
SELECT BUTTON 2						

Figure 30. Digital-A Data Screen

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EOS	A1-03 E1.EXE;31	COLD CAL MODE	P15-JUN-98	09:49:07 SCAN NUMBER	11
[ 5 ]	SCIENCE DATA	ELEMENT	0000		
[ 6 ]	CONTROL/STATUS	ELEMENT	00		
[ 7 ]	ENGINEERING	ELEMENT	00		
RADIOMETRIC DATA					
BEAM POSITION					
CH	DATA	CH	DATA	CH	DATA
3	15798	8	15414	13	15811
4	16252	9	16176	14	16029
5	15661	10	16010	15	15102
6	16413	11	15639		
7	18044	12	15817		
[ 21 ] UP		[ 22 ] DOWN			
ENGR OK	POWER	ON	CHECKSUM	IN DF5D CALC DFSD SA28	11 SA29 14
SELECT BUTTON 2					

Figure 31. Radiometric Data Screen

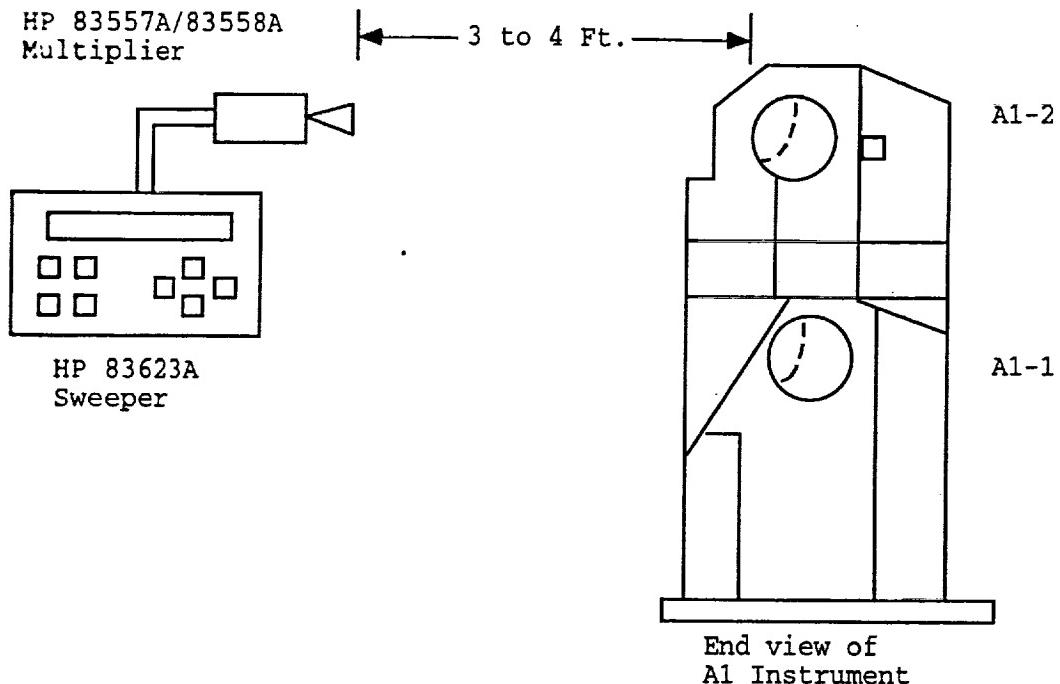


Figure 32. Channel Identification Setup

#### 4. QUALITY ASSURANCE PROVISIONS

**4.1 Responsibility for inspection.** Aerojet Quality Assurance shall inspect in accordance with the requirements of this test procedure and S-480-79 and S-480-80. Quality Control shall verify all test set-ups prior to start of test. Bonded software shall be used for all tests and shall be obtained from Quality Control. Quality Control shall review all test data for conformance to success criteria. The test data shall include test limits. For tests that satisfy requirements from S-480-80 on protoflight and flight units, customer representatives shall be invited to monitor tests and shall be invited to review the data and show approval on the test data sheets.

**4.1.1 Test facilities.** Unless otherwise specified, the examinations and tests described herein shall be conducted at GenCorp Aerojet, Azusa Operations, Azusa, CA.

**4.1.2 Electrostatic Device (ESD) handling.** All electronic hardware shall be handled in accordance with Aerojet Standard STD-2454.

**4.2 Monitoring procedures.** All tests in this procedure shall be monitored by quality control.

**4.2.1 Test equipment.** Test equipment calibration procedures shall comply with the requirements of MIL-STD-45662.

**4.2.2 Software.** Bonded software shall be used at all times.

**4.3 Monitoring procedures for materials.** Not applicable.

**4.4 Certification.** Certification for handling ESD-sensitive equipment is required for all personnel working on the assembly and test of the AMSU-A instrument, per STD-2454.

#### 4.5 Test methods

**4.5.1 Accept-reject criteria.** The accept-reject criteria for each examination or test shall be as specified in the data sheets included in each phase of the applicable test procedure. The test results shall be recorded on the data sheets to demonstrate compliance with the applicable specification requirements. Methods of analysis shall be appropriate for the parameters being inspected. It shall be the responsibility of Aerojet to review the test data and determine conformance of the unit under test to the performance requirements contained in S-480-80 and this specification.

In the event of a failure during any phase of this test procedure, the test activity shall record the required information on the Test Anomaly Record (TAR) and alert the design assurance and quality engineers. Except for failures which only represent a limited out-of-tolerance condition for a particular parameter and are not expected to interfere with the balance of the testing and which are non-destructive, the testing must be stopped until a complete description of the observed anomaly failure is documented and a Failure Analysis Strategy (FAS) is formulated, documented, and implemented to preclude loss of information or evidence that may facilitate determining the failure cause. The full set of data from the referenced tests is required in order to formulate a plan of action. The cognizant reliability engineer, quality assurance engineer, and the system or responsible test engineer shall jointly develop the FAS which must be approved by Design Assurance and Quality Assurance. Analysis and reporting shall be performed per Aerojet procedures.

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**4.5.2 General.** All data sheets associated with the tests on the unit plus the data reduction and analysis of specific parameters required by each applicable test procedure obtained from screen printouts and plots, oscilloscope photographs, or magnetic recordings shall be included with the associated shop order. During tests in which a CRT screen is to be printed or plotted and retained as a data sheet, the following annotation shall be applied:

Test/Systems Engineer:  
(Signature)

---

Quality Control:  
(Signature)

---

Customer Representative  
(Flight Hardware Only):

---

(Signature)

Date:

---

Test Paragraph No.:

---

Subassembly/Assembly Serial No.:

---

Shop Order No.:

---

**4.5.2.1 Test data.** The test data shall be that which was obtained during performance of the tests specified and recorded on the Test Data Sheet(s) (TDS) (see Appendix A) and on printouts and plots and shall be attached to the shop order associated with the test.

## 5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

## 6. NOTES

### 6.1 Acronyms and abbreviations

AMSU	Advanced Microwave Sounding Unit
ATB	Analog telemetry bus
AWG	American Wire Gage
BP	Beam Position
CAL	Calibrate
CPT	Comprehensive performance test
d	delta
DC	Direct current
DVM	Digital volt meter
EMI	Electromagnetic interference
ESD	Electrostatic Sensitive Device
EXT	External
FAS	Failure analysis strategy
GHz	Gigahertz
GIIS	General Instrument Interface Specification
GND	Ground
GSE	Ground Support Equipment
HTR	Heater
kHz	Kilohertz
LPT	Limited performance test
LSB	Least significant bit
MA	Milliampere
METSAT	Meteorological Satellite
MLB	Main load bus
MFG	Manufacturer
MMW	Millimeter wave
MS, MSEC	Millisecond
MSB	Most significant bit
MV	Millivolt
NEΔT	Noise equivalent delta temperature
PFM	Protoflight Model
PLB	Pulse load bus
PLL	Phase lock loop
PLLO	Phase lock loop oscillator

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POS	Position
PWR	Power
RTN	Return
STE	Special Test Equipment
SW	
TAR	Test Anomaly Record
TDS	Test Data Sheet
TLM	Telemetry
TM	Instrument Temperature
UIIS	Unique Instrument Interface Specification
Vdc	Volts, direct current
μs	Microsecond

**6.2 Changes.** Because of the extensiveness of the changes since the previous issue, no marginal notations have been used to show where changes have been made.

## APPENDIX A

### TEST DATA SHEETS

**10.1 Scope.** This appendix contains the test data sheets for all tests and inspections listed in section 3.

TDS	Page
1 Grounding System Test.....	A-2
2 +28 MLB During Turn-on Transient.....	A-11
3 +28 MLB Operating Power.....	A-12
4 +28 Pulse Load Bus .....	A-13
5 +28 V Analog Telemetry Bus.....	A-15
6 +10V Interface Bus Voltage.....	A-16
7 Power Input Test for LPT.....	A-17
8 1.248 MHz Clock Signal Verification.....	A-18
9 "C1" Shift Pulse Verification.....	A-19
10 "A1" Select Pulse Verification.....	A-20
11 "8 Seconds" Frame Sync Pulse .....	A-21
12 Synchronization Signals Relationship.....	A-22
13 Synchronization Signals Relationship.....	A-24
14 Commands and Digital-B Telemetry Verification.....	A-25
15 Scanner Commands Verification .....	A-26
16 Scanner Commands Verification .....	A-27
17 Scanner Commands Verification .....	A-28
18 Scanner Positions Commands .....	A-29
19 Digital-A Data Output Full Scan Mode Synch Sequence, Unit ID/Serial Number and Digital-B Serial Data Verification.....	A-30
20 Reflector Positions Section [IV].....	A-31
21 Digital-A Data Output Radiometer Data Section [V] .....	A-32
22 Full Scan Mode Temperature Sensors Section [VI] .....	A-33
23 Digital-A Data Output Warm Cal Mode Synch Sequence, Unit ID/Serial Number and Digital-B Serial Data Verification.....	A-35
24 Reflector Position Warm Cal Mode Section [IV] and Reflector Position Nadir Mode Section [IV].....	A-36
25 Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] .....	A-37
26 Warm Cal Mode Temperature Sensors Section [VI] .....	A-38
27 Digital-A Data Output Cold Cal Mode Synch Sequence, Unit ID/Serial Number and Digital-B Serial Data Verification.....	A-40
28 Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] .....	A-41
29 Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] .....	A-43
30 Cold Cal Mode Temperature Sensors Section [VI] .....	A-44
31 Digital-A Data Output Nadir Mode Synch Sequence, Unit ID/Serial Number and Digital-B Serial Data Verification .....	A-46
32 Digital-A Data Output Nadir Mode Radiometer Data Section [V] .....	A-47
33 Nadir Mode Temperature Sensors Section [VI] .....	A-48
34 Analog Telemetry Verification by Way of Connector J6 .....	A-50
35 Analog Telemetry Signals by Way of the STE .....	A-51
36 Integrate/Hold and Dump Signal Verification.....	A-53
37 Integration Time (Analog Output) Verification.....	A-54
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39 Integration Time (Analog Output) Verification.....	A-56
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44 PLL No. 1 Verification and PLL No. 2 Verification.....	A-61
45 Digital-A/GSE Mode-1 Synch Sequence, Unit ID/Serial Number and Digital-B Serial Data Verification.....	A-62
46 Reflector Position.....	A-63
47 Digital-A/GSE Mode-1 Radiometer Data Section [V] .....	A-65
48 Digital-A/GSE Mode-1 Temperature Sensors Section [VI] .....	A-66
49 Receiver Input Signals .....	A-68
50 Radiometer "Relative" NEDT Verification.....	A-69
51 Transient Susceptibility Test.....	A-71
52 Instrument Feedback Tests.....	A-73
53 Channel Identification Test .....	A-75

**TEST DATA SHEET 1** (Sheet 1 of 9)  
Grounding System Test (Paragraph 3.2.4.1)

J1 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	+28 V MLB	> 100k		
J1-2	+28 V MLB	> 100k		
J1-3	+28 V MLB RTN	> 100k		
J1-4	+28 V MLB RTN	> 100k		
J1-5	+28 V PLB	> 100k		
J1-6	+28 V PLB	> 100k		
J1-7	+28 V PLB RTN	> 100k		
J1-8	+28 V PLB RTN	> 100k		
J1-9	+28 V TMB	> 100k		
J1-10	28 V TMB RTN	> 100k		
J1-11	NO CONNECTION	> 100k		
J1-12	NO CONNECTION	> 100k		
J1-13	CHASSIS GROUND (E1)	< 1		
J1-14	+28 V MLB	> 100k		
J1-15	+28 V MLB	> 100k		
J1-16	+28 V MLB RTN	> 100k		
J1-17	+28 V MLB RTN	> 100k		
J1-18	+28 V PLB	> 100k		
J1-19	+28 V PLB	> 100k		
J1-20	+28 V PLB RTN	> 100k		
J1-21	+28 V PLB RTN	> 100k		
J1-22	+28 V TMB	> 100k		
J1-23	28 V TMB RTN	> 100k		
J1-24	SAFETY HTR PWR	> 100k		
J1-25	SAFETY HTR RTN	> 100k		

**TEST DATA SHEET 1** (Sheet 2 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

J2 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-1	Chassis Ground (E2)	< 1		
J2-2	DATA CLOCK (C1)	> 100k		
J2-3	Signal Return	> 100k		
J2-4	No Connection	> 100k		
J2-5	DIGITAL-A DATA OUT	> 100k		
J2-6	DATA ENABLE (A1)	> 100k		
J2-7	8 SEC SYNC PULSE	> 100k		
J2-8	No Connection	> 100k		
J2-9	No Connection	> 100k		

J3 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J3-1	1.248 MHz CLK	> 100k		
J3-2	1.248 MHz CLK RTN	> 100k		
J3-3	Chassis GND (E3)	< 1		

J5 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J5-1	Chassis Ground (E5)	< 1		
J5-2	MODULE PWR IND	> 100k		
J5-3	COLD CAL POS MSB (OUT)	> 100k		
J5-4	No Connection	> 100k		
J5-5	SCANNER A1-2 ON/OFF	> 100k		
J5-6	ANT IN COLD CAL POS	> 100k		
J5-7	PLL PRI/RED	> 100k		
J5-8	No Connection	> 100k		
J5-9	SURV HTR ON/OFF	> 100k		
J5-10	No Connection	> 100k		
J5-11	COLD CAL POS LSB (OUT)	> 100k		
J5-12	SCANNER A1-1 ON/OFF	> 100k		
J5-13	ANT IN WARM CAL POS	> 100k		
J5-14	ANT IN NADIR POS	> 100k		
J5-15	FULL SCAN MODE	> 100k		

TEST DATA SHEET 1 (Sheet 3 of 9)  
Grounding System Test (Paragraph 3.2.4.1)

J4 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J4-1	Chassis Ground (E4)	< 1		
J4-2	MODULE PWR DISCONN	> 100k		
J4-3	SURVIVAL HTR ON	> 100k		
J4-4	MODULE TOTALLY OFF	> 100k		
J4-5	SCANNER A1-2 ON/OFF	> 100k		
J4-6	ANT AT COLD CAL POS	> 100k		
J4-7	PLL SELECT	> 100k		
J4-8	ANT AT NADIR POS	> 100k		
J4-9	COLD CAL POS MSB (IN)	> 100k		
J4-10	No Connection	> 100k		
J4-11	No Connection	> 100k		
J4-12	+10 V INTERFACE BUS	> 100k		
J4-13	10 V INTERFACE BUS RTN	> 100k		
J4-14	MODULE PWR CONN	> 100k		
J4-15	SURVIVAL HTR OFF	> 100k		
J4-16	SCANNER A1-1 ON/OFF	> 100k		
J4-17	ANT AT WARM CAL POS	> 100k		
J4-18	FULL SCAN	> 100k		
J4-19	COLD CAL POS LSB (IN)	> 100k		
J4-20	No Connection	> 100k		
J4-21	No Connection	> 100k		
J4-22	No Connection	> 100k		
J4-23	No Connection	> 100k		
J4-24	+10 V INTERFACE BUS	> 100k		
J4-25	10 V INTERFACE BUS RTN	> 100k		

**TEST DATA SHEET 1 (Sheet 4 of 9)**  
**Grounding System Test (Paragraph 3.2.4.1)**

J6 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-1	Chassis GND (E6)	< 1		
J6-2	RF SHELF A1-1 TEMP	> 100k		
J6-3	A1-1 SCAN MTR TEMP	> 100k		
J6-4	WARM LOAD A1-1 TEMP	> 100k		
J6-5	No Connection	> 100k		
J6-6	PLLO RED LOCK DETECT	> 100k		
J6-7	No Connection	> 100k		
J6-8	A1-1 DRIVE MTR CURR	> 100k		
J6-9	+15 V ANT DR MON	> 100k		
J6-10	+5 V ANT DR MON	> 100k		
J6-11	+15 V SIG PROC MON	> 100k		
J6-12	+5 V SIG PROC MON	> 100k		
J6-13	L.O. VOLTAGE CH 3 MON	> 100k		
J6-14	L.O. VOLTAGE CH 5 MON	> 100k		
J6-15	L.O. VOLTAGE CH 7 MON	> 100k		
J6-16	+15 VDC PLL LO MON	> 100k		
J6-17	+10 V MIXER/AMP MON	> 100k		
J6-18	L.O. VOLTAGE CH 15 MON	> 100k		
J6-19	No Connection	> 100k		
J6-20	28 V TMB RTN	> 100k		
J6-21	RF SHELF A1-2 TEMP	> 100k		
J6-22	A1-2 SCAN MTR TEMP	> 100k		
J6-23	WARM LOAD A1-2 TEMP	> 100k		
J6-24	No Connection	> 100k		
J6-25	PLLO PRI LOCK DETECT	> 100k		
J6-26	No Connection	> 100k		
J6-27	A1-2 DRIVE MTR CURR	> 100k		
J6-28	-15 V ANT DR MON	> 100k		
J6-29	-15 V SIG PROC MON	> 100k		
J6-30	L.O. VOLTAGE CH 4 MON	> 100k		
J6-31	L.O. VOLTAGE CH 6 MON	> 100k		
J6-32	L.O. VOLTAGE CH 8 MON	> 100k		
J6-33	-15 VDC PLL LO MON	> 100k		
J6-34	+8 V IF AMP MON	> 100k		
J6-35	No Connection	> 100k		
J6-36	No Connection	> 100k		
J6-37	No Connection	> 100k		

**TEST DATA SHEET 1 (Sheet 5 of 9)**  
**Grounding System Test (Paragraph 3.2.4.1)**

J7 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J7-1	Chassis GND (E7)	< 1		
J7-2	No Connection	> 100k		
J7-3	REDUN PLO LOCK DET	> 100k		
J7-4	15 V RTN (2/3)	> 100k		
J7-5	15 V RTN (2/3)	> 100k		
J7-6	DUMP TEST POINT	> 100k		
J7-7	No Connection	> 100k		
J7-8	CH3 OUT TEST POINT	> 100k		
J7-9	CH4 OUT TEST POINT	> 100k		
J7-10	CH5 OUT TEST POINT	> 100k		
J7-11	CH6 OUT TEST POINT	> 100k		
J7-12	CH7 OUT TEST POINT	> 100k		
J7-13	CH8 OUT TEST POINT	> 100k		
J7-14	CH9 OUT TEST POINT	> 100k		
J7-15	No Connection	> 100k		
J7-16	No Connection	> 100k		
J7-17	GSE CMD LSB	> 100k		
J7-18	GSE CMD MSB-1	> 100k		
J7-19	+5 V GSE INTERLOCK A	> 100k		
J7-20	No Connection	> 100k		
J7-21	No Connection	> 100k		
J7-22	PRI PLO LOCK DET	> 100k		
J7-23	No Connection	> 100k		
J7-24	I/H TEST POINT	> 100k		
J7-25	No Connection	> 100k		
J7-26	15 V RTN (2/3)	> 100k		
J7-27	CH10 OUT TEST POINT	> 100k		
J7-28	CH11 OUT TEST POINT	> 100k		
J7-29	CH12 OUT TEST POINT	> 100k		
J7-30	CH13 OUT TEST POINT	> 100k		
J7-31	CH14 OUT TEST POINT	> 100k		
J7-32	CH15 OUT TEST POINT	> 100k		
J7-33	No Connection	> 100k		
J7-34	No Connection	> 100k		
J7-35	GSE CMD MSB	> 100k		
J7-36	5 V RTN (1)	> 100k		
J7-37	+5 V GSE INTERLOCK B	> 100k		

**TEST DATA SHEET 1 (Sheet 6 of 9)**  
**Grounding Interface Test (Paragraph 3.2.4.1)**

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	J1-2	+28 V MLB	< 1		
J1-1	J1-14	+28 V MLB	< 1		
J1-1	J1-15	+28 V MLB	< 1		
J1-3	J1-4	28 V MLB RTN	< 1		
J1-3	J1-16	28 V MLB RTN	< 1		
J1-3	J1-17	28 V MLB RTN	< 1		
J1-5	J1-6	+28 V PLB	< 1		
J1-5	J1-18	+28 V PLB	< 1		
J1-5	J1-19	+28 V PLB	< 1		
J1-7	J1-8	28 V PLB RTN	< 1		
J1-7	J1-20	28 V PLB RTN	< 1		
J1-7	J1-21	28 V PLB RTN	< 1		
J1-9	J1-22	+28 V TMB	< 1		
J1-10	J1-23	28 V TMB RTN	< 1		
J1-10	J6-20	28 V TMB RTN	< 1		
J4-12	J4-24	+10 V INTERFACE BUS	< 1		
J4-13	J4-25	10 V INTERFACE BUS RTN	< 1		
J1-1	J1-3	+28 V MLB	> 100k		
J1-1	J1-5	+28 V MLB	> 100k		
J1-1	J1-7	+28 V MLB	> 100k		
J1-1	J1-9	+28 V MLB	> 100k		
J1-1	J1-10	+28 V MLB	> 100k		
J1-1	J1-24	+28 V MLB	> 100k		
J1-1	J1-25	+28 V MLB	> 100k		
J1-1	J2-3	+28 V MLB	> 100k		
J1-1	J4-12	+28 V MLB	> 100k		
J1-1	J4-13	+28 V MLB	> 100k		
J1-3	J1-5	28 V MLB RTN	> 100k		
J1-3	J1-7	28 V MLB RTN	> 100k		
J1-3	J1-9	28 V MLB RTN	> 100k		
J1-3	J1-10	28 V MLB RTN	> 100k		
J1-3	J1-24	28 V MLB RTN	> 100k		
J1-3	J1-25	28 V MLB RTN	> 100k		
J1-3	J2-3	28 V MLB RTN	> 100k		
J1-3	J4-12	28 V MLB RTN	> 100k		
J1-3	J4-13	28 V MLB RTN	> 100k		

TEST DATA SHEET 1 (Sheet 7 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-5	J1-7	+28 V PLB	> 100k		
J1-5	J1-9	+28 V PLB	> 100k		
J1-5	J1-10	+28 V PLB	> 100k		
J1-5	J1-24	+28 V PLB	> 100k		
J1-5	J1-25	+28 V PLB	> 100k		
J1-5	J2-3	+28 V PLB	> 100k		
J1-5	J4-12	+28 V PLB	> 100k		
J1-5	J4-13	+28 V PLB	> 100k		
J1-7	J1-9	28 V PLB RTN	> 100k		
J1-7	J1-10	28 V PLB RTN	> 100k		
J1-7	J1-24	28 V PLB RTN	> 100k		
J1-7	J1-25	28 V PLB RTN	> 100k		
J1-7	J2-3	28 V PLB RTN	> 100k		
J1-7	J4-12	28 V PLB RTN	> 100k		
J1-7	J4-13	28 V PLB RTN	> 100k		
J1-9	J1-10	+28 V TMB	> 100k		
J1-9	J1-24	+28 V TMB	> 100k		
J1-9	J1-25	+28 V TMB	> 100k		
J1-9	J2-3	+28 V TMB	> 100k		
J1-9	J4-12	+28 V TMB	> 100k		
J1-9	J4-13	+28 V TMB	> 100k		
J1-10	J1-24	28 V TMB RTN	> 100k		
J1-10	J1-25	28 V TMB RTN	> 100k		
J1-10	J2-3	28 V TMB RTN	> 100k		
J1-10	J4-12	28 V TMB RTN	> 100k		
J1-10	J4-13	28 V TMB RTN	> 100k		
J1-24	J1-25	SAFETY HTR PWR	> 100k		
J1-24	J2-3	SAFETY HTR PWR	> 100k		
J1-24	J4-12	SAFETY HTR PWR	> 100k		
J1-24	J4-13	SAFETY HTR PWR	> 100k		
J1-25	J2-3	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-12	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-13	SAFETY HTR PWR RTN	> 100k		
J2-3	J4-12	SIGNAL RTN	> 100k		
J2-3	J4-13	SIGNAL RTN	> 100k		
J4-12	J4-13	+10 V INTERFACE BUS	> 100k		

TEST DATA SHEET 1 (Sheet 8 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-2	J4-13	DATA CLOCK (C1)	> 2k		
J2-5	J4-13	DIGITAL-A DATA OUT	> 2k		
J2-6	J4-13	DATA ENABLE (A1)	> 2k		
J2-7	J4-13	8 SEC SYNC PULSE	> 2k		
J3-1	J4-13	1.248 MHZ CLK	> 2k		
J3-2	J4-13	1.248 MHZ CLK RTN	> 2k		
J4-2	J4-13	MODULE PWR DISCONN	> 2k		
J4-3	J4-13	SURVIVAL HTR ON	> 2k		
J4-4	J4-13	MODULE TOTALLY OFF	> 2k		
J4-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J4-6	J4-13	ANT AT COLD CAL POS	> 2k		
J4-7	J4-13	PLL SELECT	> 2k		
J4-8	J4-13	ANT AT NADIR POS	> 2k		
J4-9	J4-13	COLD CAL POS MSB (IN)	> 2k		
J4-14	J4-13	MODULE PWR CONN	> 2k		
J4-15	J4-13	SURVIVAL HTR OFF	> 2k		
J4-16	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J4-17	J4-13	ANT AT WARM CAL POS	> 2k		
J4-18	J4-13	FULL SCAN	> 2k		
J4-19	J4-13	COLD CAL POS LSB (IN)	> 2k		
J5-2	J4-13	MODULE PWR IND	> 2k		
J5-3	J4-13	COLD CAL POS MSB (OUT)	> 2k		
J5-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J5-6	J4-13	ANT IN COLD CAL POS	> 2k		
J5-7	J4-13	PLL PRI/RED	> 2k		
J5-9	J4-13	SURV HTR ON/OFF	> 2k		
J5-11	J4-13	COLD CAL POS LSB (OUT)	> 2k		
J5-12	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J5-13	J4-13	ANT IN WARM CAL POS	> 2k		
J5-14	J4-13	ANT IN NADIR POS	> 2k		
J5-15	J4-13	FULL SCAN MODE	> 2k		

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TEST DATA SHEET 1 (Sheet 9 of 9)  
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-2	J1-10	RF SHELF A1-1 TEMP	> 2k		
J6-3	J1-10	A1-1 SCAN MTR TEMP	> 2k		
J6-4	J1-10	WARM LOAD A1-1 TEMP	> 2k		
J6-6	J4-13	PLLO RED LOCK DETECT	> 2k		
J6-8	J4-13	A1-1 DRIVE MTR CVR	> 2k		
J6-9	J4-13	+15 VDC ANT DRIVE MON	> 2k		
J6-10	J4-13	+5 VDC ANT DRIVE MON	> 2k		
J6-11	J4-13	+15 VDC SIG PROC MON	> 2k		
J6-12	J4-13	+5VDC SIG PROC MON	> 2k		
J6-13	J4-13	L.O. VOLTAGE CH3 MON	> 2k		
J6-14	J4-13	L.O. VOLTAGE CH5 MON	> 2k		
J6-15	J4-13	L.O. VOLTAGE CH7 MON	> 2k		
J6-16	J4-13	+15 VDC PLL LO MON	> 2k		
J6-17	J4-13	+10 V MIXER/AMP MON	> 2k		
J6-18	J4-13	L.O. VOLTAGE CH15 MON	> 2k		
J6-21	J4-10	RF SHELF A1-2 TEMP	> 2k		
J6-22	J4-10	A1-2 SCAN MTR TEMP	> 2k		
J6-23	J4-10	WARM LOAD A1-2 TEMP	> 2k		
J6-25	J4-13	PLLO PRI LOCK DETECT	> 2k		
J6-27	J4-13	A1-2 DRIVE MTR CURR	> 2k		
J6-28	J4-13	-15 VDC ANT DRIVE MON	> 2k		
J6-29	J4-13	-15 VDC SIG PROC MON	> 2k		
J6-30	J4-13	L.O. VOLTAGE CH4 MON	> 2k		
J6-31	J4-13	L.O. VOLTAGE CH6 MON	> 2k		
J6-32	J4-13	L.O. VOLTAGE CH8 MON	> 2k		
J6-33	J4-13	-15 VDC PLL LO MON	> 2k		
J6-34	J4-13	IF AMP MON	> 2k		

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Quality Control

Date

**TEST DATA SHEET 2**  
+28 MLB During Turn-on Transient (Paragraph 3.2.4.2.1.1)

At 28.56 Vdc:

Step	Parameter	Measured/ Calculated	Required*		
			S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	ms	20 ms max	300 ms max	
8	Peak Current	Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	mA/μs	677 mA/μs	250 mA/μs	

At 27.44 Vdc:

Step	Parameter	Measured/ Calculated	Required*		
			S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	ms	20 ms max	300 ms max	
8	Peak Current	Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	mA/μs	677 mA/μs	250 mA/μs	

At 28.00 Vdc:

Step	Parameter	Measured/ Calculated	Required*		
			S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	ms	20 ms max	300 ms max	
8	Peak Current	Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	mA/μs	677 mA/μs	250 mA/μs	

\* Refer to Figure 5.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

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**TEST DATA SHEET 3**  
+28 MLB Operating Power (Paragraph 3.2.4.2.1.2)

Step	+28V MLB at 27 Volts	Measured	Units	Required	Pass/Fail
2	+28 V MLB voltage at 27 V ( $V_b$ ) (Measured)		Volts	$27.0 \pm 0.1$	
3	Average Current ( $I_V$ ) $(P_{LO} \# 1)$		Amps	N/A	N/A
4	+28 V MLB bus power = $I_V \times V_b$ $(P_{LO} \# 1)$		Watts	82 W max	

+28 V MLB at 28 Volts

59	+28 V MLB Bus Voltage at 28 V ( $V_b$ ) (Measured)		Volts	$28.0 \pm 0.1$	
60	Average Current ( $I_V$ ) (PLO #1)		Amps	N/A	N/A
61	+28 V MLB Operating Power = $I_V \times V_b$ (PLO #1)		Watts	82 W max	

+28 V MLB at 29 Volts

8 16	+28 V MLB voltage at 29 V ( $V_b$ ) (Measured)		Volts	$29.0 \pm 0.1$	
917	Average Current ( $I_V$ ) $(P_{LO\#1})$		Amps	N/A	N/A
1018	+28 V MLB operating power = $I_V \times V_b$ $(P_{LO\#1})$		Watts	82 W max	

6	AVERAGE CURRENT (I <sub>V</sub> ) (PL0#2)	AMPS	N/A	N/A
7	+28 V MVB bus power = I <sub>V</sub> x V <sub>D</sub> (PL0#2)	WATTS	82 W MAX	

13	AVERAGE CURRENT (IV) (PLO #2)		AMPS	N/A	N/A
14	+28VMLB bus power = $I_V \times V_b$ (PLO #2)		WATTS	82W MAX	

20	Average current (Iv) (PLO#2)		AMPS	N/A	N/A
21	+28V MCB bus power = Iv x Vb (PLO#2)		watts	82 W max	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order:      S/N:

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**TEST DATA SHEET 4 (Sheet 1 of 2)**  
**+28 Pulse Load Bus (Paragraph 3.2.4.2.2.1-3.2.4.2.2.5)**

6 R/H Platt  
3/16/99

Paragraph	Parameter	Measured or Calculated	Required	Pass/ Fail
3.2.4.2.2.1 From -0.1 to two seconds				
	Peak Current = $I_p$	—Amps	1.3 amps max	
3.2.4.2.2.2 From 2 to 4 seconds				
	Peak Current = $I_p$	—Amps	1.3 amps max	
3.2.4.2.2.3 From 4 to 6 seconds				
	Peak Current = $I_p$	—Amps	1.3 amps max	
3.2.4.2.2.4 From 6 to 8 seconds				
	Peak Current = $I_p$	—Amps	1.3 amps max	
3.2.4.2.2.5 Eight Sec. Integrated Current Measurement:				
	Current	—mA	None	
3.2.4.2.2.6 Turn-on Transient:				
	dI/dT	—mA/ $\mu$ s	744 mA/ $\mu$ s *	
	Peak Current = $I_p$	—Amps	11.5 Amps	

\* Refer to Figure 9.

Bus current during the I/H, D period

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.1	From -0.1 to 2 secs	mA	N/A
3.2.4.2.2.2	From 2 to 4 secs	mA	N/A
3.2.4.2.2.3	From 4 to 6 secs	mA	N/A
3.2.4.2.2.5	From 6 to 8 secs	mA	N/A

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

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TEST DATA SHEET 4 (Sheet 2 of 2)  
+28 Pulse Load Bus (Paragraph 3.2.4.2.2)



3/17/99

Bus current during warm cal, cold cal & Nadir

Paragraph <u>7</u>	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.6(2)	Warm cal	mA	N/A
3.2.4.2.2.6(3)	Cold cal	mA	N/A
3.2.4.2.2.6(4)	Nadir	mA	N/A
3.2.4.2.2.7(5)	WARM CAL (MOTORS OFF)	mA	N/A

3-17-99



Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

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(Flight Hardware Only)

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Quality Control

Date

**TEST DATA SHEET 5**  
**+28 V Analog Telemetry Bus (Paragraph 3.2.4.2.3)**

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	+28 V ATB Bus Voltage ( $V_{at}$ ) (Measured)	____ Volts	28.0 ±0.5	
4	Av. Current ( $I_a$ )	____ mA	7 mA max	
5	+28 V ATB Operating Power = $I_a \times V_{at}$	____ mW	200 mW max	

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 6**  
**+10 V Interface Bus Voltage (Paragraph 3.2.4.2.4)**

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	Avg. Current ( $I_a$ )	____ mA	10 mA max	
3	+10 V Interface Bus ( $V_{ib}$ ) (Measured)	____ Volts	9.0 ±1.0 V	
4	+10 V Interface Bus Power = $I_a \times V_{ib}$	____ mW	100 mW max	

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 7**  
**Power Input Test for LPT (Paragraph 3.2.4.2.5)**

Step	Parameter	Measured	Units	Required	Pass/ Fail
3	+28 V MLB Voltage (Vb) (Measured at connector J1)		Volts	28 ±0.5	
3	Current		Amps	Between 0.5 and 4.3 Amps	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

\_\_\_\_\_  
Test Systems Engineer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Customer Representative  
(Flight Hardware Only)      Date

\_\_\_\_\_  
Quality Control

\_\_\_\_\_  
Date

AE-26156/3B  
10 Mar 99

## **TEST DATA SHEET 8**

1.248 CLOCK SIGNAL  
ATTACH PHOTOGRAPH OR PLOT HERE

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
5	Clock Frequency	____MHz	1.248 ±10%	
	Clock Amplitude	____Volts	9.0 ±1.0 V	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

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## Test Systems Engineer

---

**Customer Representative** \_\_\_\_\_ **Date** \_\_\_\_\_  
**(Flight Hardware Only)**

**TEST DATA SHEET 9**  
"C1" Shift Pulse Verification (Paragraph 3.2.4.3.2.2)

**"C1" SHIFT PULSE**  
Attach Photograph OR Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Pulse Timing (A) *	_____ $\mu$ s	$48 \mu\text{s} \pm 10\%$	
Pulse Timing (B) *	_____ $\mu$ s	$12 \mu\text{s} \pm 10\%$	
Pulse Amplitude	_____ Volts	$9.0 \pm 1.0 \text{ V}$	

\* Refer to Figure 13 for location of the pulse timing A and B.

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

\_\_\_\_\_  
Test Systems Engineer

\_\_\_\_\_  
Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 10**  
**"A1" Select Pulse Verification (Paragraph 3.2.4.3.2.3)**

**"A1" SELECT PULSE**  
Attach Photograph or Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Select Pulse Timing (F) *	____ $\mu$ s	$961.5 \mu\text{s} \pm 10\%$	
Select Pulse Amplitude	____ Volts	$9.0 \pm 1.0 \text{ V}$	

\* Refer to Figure 13 for location of the pulse timing F

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

\_\_\_\_\_  
Test Systems Engineer                                  Date \_\_\_\_\_

Customer Representative                                  Date \_\_\_\_\_  
(Flight Hardware Only)    Quality Control    Date \_\_\_\_\_

TEST DATA SHEET 11  
"8 Seconds" Frame Sync Pulse (Paragraph 3.2.4.3.2.4)

"8 SECONDS" FRAME SYNC PULSE  
Attach Photograph or Plot Here  
(Record of "C" timing only is required)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
1*	Frame Sync Pulse Timing (G)*	____ Sec	8 Sec $\pm$ 10%	
	Frame Sync Pulse Timing (C)*	____ $\mu$ s	240.4 $\mu$ s $\pm$ 10%	
	Frame Sync Pulse Amplitude	____ Volts	9.0 $\pm$ 1.0 V	

\* Refer to Figure 13 for location of the timing pulses for G and C.

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

Test Systems Engineer

Date

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(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 12** (Sheet 1 of 2)  
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

#### A1 Select pulse and the 8 seconds Frame sync pulse.

**ATTACH PHOTOGRAPH OR PLOT HERE**

Verify that the sync pulse between H and C is as shown in Figure 19.

**TIME MEASURED:** \_\_\_\_\_

TIME REQUIRED: 1.2 ms  $\pm$ 10%

PASS/FAIL \_\_\_\_\_

**Circle Test:**      CPT      LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

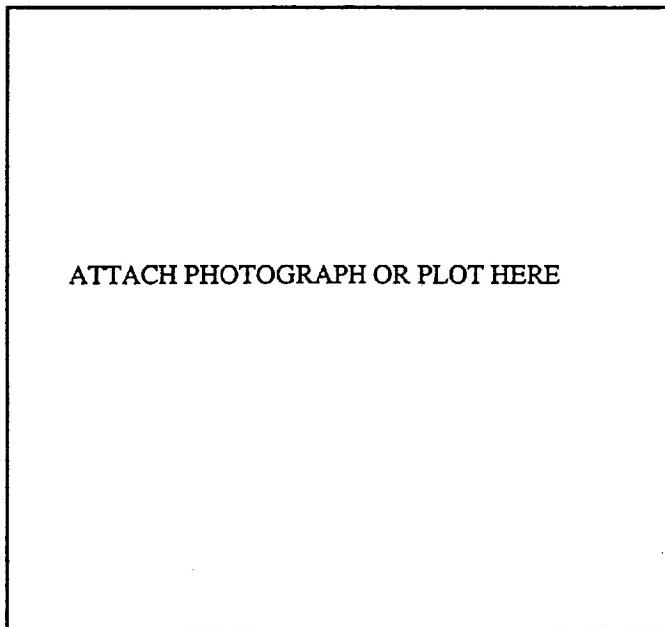
---

**Test Systems Engineer** **Date**

**Customer Representative** \_\_\_\_\_ **Date** \_\_\_\_\_  
**(Flight Hardware Only)**

**TEST DATA SHEET 12 (Sheet 2 of 2)**  
**Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)**

A1 Select pulse and the C1 Shift pulse.



ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between I and E is as shown in Figure 19.

TIME MEASURED: \_\_\_\_\_

TIME REQUIRED:  $24 \mu\text{s} \pm 1 \mu\text{s}$

PASS/FAIL: \_\_\_\_\_

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

\_\_\_\_\_  
Test Systems Engineer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Customer Representative  
(Flight Hardware Only)

\_\_\_\_\_  
Date

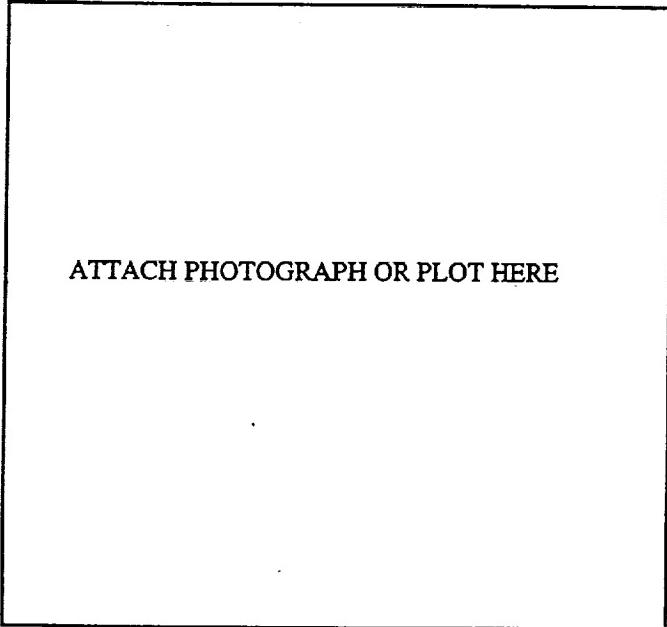
\_\_\_\_\_  
Quality Control

\_\_\_\_\_  
Date

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10 Mar 99

**TEST DATA SHEET 13**  
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 1.248 MHz clock.



Verify that the sync pulse between I and J is as shown in Figure 19.

PASS/FAIL \_\_\_\_\_

ATTACH PHOTOGRAPH OR PLOT HERE

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

10 Mar 99

**TEST DATA SHEET 14**

Commands and Digital-B Telemetry Verification (Paragraphs 3.2.4.3.3.1, 3.2.4.3.3.2, 3.2.4.3.3.3, and 3.2.4.3.3.4)

Test	Digital-B Commands Verification Via STE			Visual Inspection		Pass/Fail
	Command	Observed	Required	Observed	Required	
3.2.4.3.3.1  Module Totally Off	Scanner A1-1		OFF		Antenna pointing to warm load.	
	Scanner A1-2		OFF		Antenna pointing to warm load.	
	Module Power		Disconnect	N/A	N/A	
	Survival Htr. Power.		OFF		28 V supply current=0	
3.2.4.3.3.2  Survival Heater Power	Survival Heater ON		ON	N/A	N/A	
	Survival Heater OFF		OFF	N/A	N/A	
3.2.4.3.3.3  Module Power Connect	Module Power		Connect		+28 V DC current is between 0.5 and 3.2 amps.	
3.2.4.3.3.4  PLL Power	PLLO#2		PLLO#2	N/A	N/A	
	PLLO#1		PLLO#1	N/A	N/A	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

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**TEST DATA SHEET 15**  
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 1)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power		CONNECT	
	2 Survival Heater		OFF	
	3 Scanner A1 Power		ON	
	4 Scanner A2 Power		ON	
	5 Antenna Warm Cal Pos.		NO	
	6 Antenna Cold Cal Pos.		NO	
	7 Antenna NADIR Position		NO	
	8 Antenna Full Scan		YES	
	9 PLL Power		PLL#1	
	10 Cold MSB		0	
	11 Cold LSB		0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 16**  
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 2)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power		CONNECT	
	2 Survival Heater		OFF	
	3 Scanner A1 Power		OFF	
	4 Scanner A2 Power		OFF	
	5 Antenna Warm Cal Pos.		NO	
	6 Antenna Cold Cal Pos.		NO	
	7 Antenna NADIR Position		NO	
	8 Antenna Full Scan		YES	
	9 PLL Power		PLLO#1	
	10 Cold MSB		0	
	11 Cold LSB		0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

## TEST DATA SHEET 17

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power		CONNECT	
	2 Survival Heater		OFF	
	3 Scanner A1 Power		ON	
	4 Scanner A2 Power		ON	
	5 Antenna Warm Cal Pos.		NO	
	6 Antenna Cold Cal Pos.		NO	
	7 Antenna NADIR Position		NO	
	8 Antenna Full Scan		YES	
	9 PLL Power		PLLO#1	
	10 Cold MSB		0	
	11 Cold LSB		0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order:      S/N:

## **Test Systems Engineer**

**Customer Representative** \_\_\_\_\_ **Date** \_\_\_\_\_ **Quality Control** \_\_\_\_\_ **Date** \_\_\_\_\_  
**(Flight Hardware Only)**

**TEST DATA SHEET 18**  
Scanner Positions Commands (Paragraph 3.2.4.3.3.6)

Test	Digital "B" Verification			Pass/Fail
	Step/Description	Observed	Required	
Scanner Position Commands	1-Warm Cal.		YES	
	2-Cold Cal. Pos.	MSB LSB	0 1	
	3-Cold Cal. Pos.	MSB LSB	1 0	
	4-Cold Cal. Pos.	MSB LSB	1 1	
	5-Cold Cal. Pos.	MSB LSB	0 0	
	6-NADIR		YES	
	7-Warm Cal		YES	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 19**  
Digital-A Data Output Full Scan Mode Synch Sequence,  
Unit I.D./Serial Number and Digital-B Serial Data Verification  
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.1)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		2	
	0006	Digital-B Data Byte 2		**	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	
* AMSU A1 Identification Words (data entered in decimal system)			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	
** Required value = 14 when PLL #1 is active; and = 6 when PLL #2 is active.					

**Circle Test:**      CPT      LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

---

## Test Systems Engineer

---

**Customer Representative** \_\_\_\_\_ **Date** \_\_\_\_\_  
**(Flight Hardware Only)**

**TEST DATA SHEET 20**  
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014				0016			
02	0048				0050			
03	0082				0084			
04	0116				0118			
05	0150				0152			
06	0184				0186			
07	0218				0220			
08	0252				0254			
09	0286				0288			
10	0320				0322			
11	0354				0356			
12	0388				0390			
13	0422				0424			
14	0456				0458			
15	0490				0492			
16	0524				0526			
17	0558				0560			
18	0592				0594			
19	0626				0628			
20	0660				0662			
21	0694				0696			
22	0728				0730			
23	0762				0764			
24	0796				0798			
25	0830				0832			
26	0864				0866			
27	0890				0900			
28	0932				0934			
29	0966				0968			
30	1000				1002			
CC	1034				1036			
WC	1186				1188			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 21**  
**Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)**

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.  
\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 22** (Sheet 1 of 2)  
**Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)**

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

**TEST DATA SHEET 22 (Sheet 2 of 2)**  
**Full Scan Mode Temperature Sensors Section [VI (Paragraph 3.2.4.3.4.1)]**

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

- \* Value is from the STE printout sheets. Copying data to this sheet is optional.
- \*\* = Count of 24,552 +1765,-1308.

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 23**  
 Digital-A Data Output Warm Cal Mode Synch Sequence,  
 Unit I.D./Serial Number and Digital-B Serial Data Verification  
 Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		4	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	
* AMSU A1 Identification Words (data entered in decimal system)			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

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**TEST DATA SHEET 24**  
Reflector Position Warm Cal Mode Section [IV] and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2 and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			
15	3.2.4.3.4.4			

WC = Warm Cal

15 = Nadir Position

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			
15	3.2.4.3.4.4			

WC = Warm Cal

15 = Nadir Position

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer \_\_\_\_\_ Date \_\_\_\_\_

Customer Representative  
(Flight Hardware Only)      Date

Quality Control \_\_\_\_\_ Date \_\_\_\_\_

**TEST DATA SHEET 25**  
Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.2)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.  
\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 26 (Sheet 1 of 2)  
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 26 (Sheet 2 of 2)  
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.  
\*\* = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 27**  
 Digital-A Data Output Cold Cal Mode Synch Sequence,  
 Unit I.D./Serial Number and Digital-B Serial Data Verification  
 Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.3)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		8	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	

\* AMSU A1 Identification Words  
(data entered in decimal system)

	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 28 (Sheet 1 of 2)**

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			
	b.			
	c.			
	d.			

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

## **Test Systems Engineer**

---

**Customer Representative  
(Flight Hardware Only)**

Date

---

## **Quality Control**

— 1 —

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 28 (Sheet 2 of 2)**  
Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			
	b.			
	c.			
	d.			

CC = Cold Cal

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

## TEST DATA SHEET 29

Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.3)  
 Condition: Cold Cal Position MSB=0 and Cold Cal Position LSB=0

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.  
 \*\* Required =  $16,500 \pm 4000$  counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 30 (Sheet 1 of 2)**  
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 30 (Sheet 2 of 2)  
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.  
\*\* = Count of 24,552 +1765,-1308.

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

**TEST DATA SHEET 31**  
Digital-A Data Output Nadir Mode Synch Sequence,  
Unit I.D./Serial Number and Digital-B Serial Data Verification  
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.4)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		16	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	
• AMSU A1 Identification Words (data entered in decimal system)					
			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 32**  
Digital-A Data Output Nadir Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.4)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050			0
WC	1190		0		1202			0

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

\*\* Required =  $16,500 \pm 4000$  counts (Unless otherwise indicated).

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 33 (Sheet 1 of 2)**  
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

**TEST DATA SHEET 33 (Sheet 2 of 2)**  
**Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)**

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.  
\*\* = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 34**  
Analog Telemetry Verification by Way of Connector J6 (Paragraph 3.2.4.3.5.1)

	From	Description	To	Measured (volts)	Required (volts)	Pass/Fail
03	J6-02	RF Shelf A1-1 Temp.	J1-10	_____	3.5 ± 2 V	_____
01	J6-03	A1-1 Scan Motor Temp.	J1-10	_____	3.5 ± 2 V	_____
05	J6-04	Warm Load A1-1 Temp.	J1-10	_____	3.5 ± 2 V	_____
04	J6-21	RF Shelf A1-2 Temp.	J1-10	_____	3.5 ± 2 V	_____
02	J6-22	A1-2 Scan Motor Temp.	J1-10	_____	3.5 ± 2 V	_____
06	J6-23	Warm Load A1-2 Temp.	J1-10	_____	3.5 ± 2 V	_____
25	J6-06	PLLO No. 2 Lock detect	J2-03	_____	3.5 ± 2 V	_____
07	J6-08	A1-1 Drive Motor Curr.	J2-03	_____	3.5 ± 2 V	_____
10	J6-09	+15 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
15	J6-10	+5 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
09	J6-11	+15 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
14	J6-12	+5 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
22	J6-13	L.O. Voltage Channel 3	J2-03	_____	3.5 ± 2 V	_____
24	J6-14	L.O. Voltage Channel 5	J2-03	_____	3.5 ± 2 V	_____
20	J6-15	L.O. Voltage Channel 7	J2-03	_____	3.5 ± 2 V	_____
16	J6-16	+15 V PLL LO Ch 9-14	J2-03	_____	3.5 ± 2 V	_____
17	J6-17	*	J2-03	_____	3.5 ± 2 V	_____
27	J6-18	L.O. Voltage Channel 15	J2-03	_____	3.5 ± 2 V	_____
26	J6-25	PLLO No. 1 Lock detect	J2-03	_____	3.5 ± 2 V	_____
08	J6-27	A1-2 Drive Motor Curr.	J2-03	_____	3.5 ± 2 V	_____
12	J6-28	-15 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
11	J6-29	-15 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
23	J6-30	L.O. Voltage Channel 4	J2-03	_____	3.5 ± 2 V	_____
21	J6-31	L.O. Voltage Channel 6	J2-03	_____	3.5 ± 2 V	_____
19	J6-32	L.O. Voltage Channel 8	J2-03	_____	3.5 ± 2 V	_____
18	J6-33	-15 V PLL LO Ch 9-14	J2-03	_____	3.5 ± 2 V	_____
13	J6-34	**	J2-03	_____	3.5 ± 2 V	_____

\* +8.5 V PLL LO Ch 9-14 for S/N 101-104, +10V Mixer Amp for S/N 105 and above.

\*\* +8 V Receiver for S/N 101-104, +8 V IF Amp for S/N 105 and above.

\*\*\* 4.5 ± 0.5 when locked, 0.5 ± 0.5 when unlocked or OFF. One must be locked.

Circle Test:    CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 35 (Sheet 1 of 2)  
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (Deg. C)	Required (Deg. C)	Pass/Fail
01	A1-1 Scanner Motor	Temp	_____	25 ± 15	_____
02	A1-2 Scanner Motor	Temp	_____	25 ± 15	_____
03	A1-1 RF Shelf	Temp	_____	25 ± 15	_____
04	A1-2 RF Shelf	Temp	_____	25 ± 15	_____
05	A1-1 Warm Load	Temp	_____	25 ± 15	_____
06	A1-2 Warm Load	Temp	_____	25 ± 15	_____
			(mAmps)	(mAmps)	
07	Ant A1-1 Drv Motor Current		_____	125 mA (Max)	_____
08	Ant A1-2 Drv Motor Current		_____	125 mA (Max)	_____

(\*) Data from the printout sheet. Rewriting data on this space is optional.

(Continued on sheet 2)

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

\_\_\_\_\_  
Test Systems Engineer                                  Date

\_\_\_\_\_  
Customer Representative                                  Date      Quality Control    Date  
(Flight Hardware Only)

**TEST DATA SHEET 35 (Sheet 2 of 2)**  
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (volts)	Required (volts)	Pass/Fail
09	Signal Processing	+15 V	_____	15.0 ± 0.5 V	_____
10	Antenna Drive	+15 V	_____	15.0 ± 0.5 V	_____
11	Signal Processing	-15 V	_____	-15.0 ± 0.5 V	_____
12	Antenna Drive	-15 V	_____	-15.0 ± 0.5 V	_____
13	Receiver	+8 V	_____	8.0 ± 0.5 V	_____
14	Sig Processing	+5 V	_____	5.0 ± 0.5 V	_____
15	Antenna Drive	+5 V	_____	5.0 ± 0.5 V	_____
16	Phase Lock Loop Ch 9-14 (a)/ Receiver/Mixer IF (b)	+8.5 V	_____	8.5 ± 0.5 V	_____
17	Phase Lock Loop Ch 9-14	+10 V	_____	10.0 ± 0.5 V	_____
18	Phase Lock Loop Ch 9-14	+15 V	_____	15.0 ± 0.5 V	_____
19	L.O. #8	-15 V	_____	-15.0 ± 0.5 V	_____
20	L.O. #7	Ch-8	_____	(**) ± 0.5 V	_____
21	L.O. #6	Ch-7	_____	(**) ± 0.5 V	_____
22	L.O. #3	Ch-6	_____	(**) ± 0.5 V	_____
23	L.O. #4	Ch-3	_____	(**) ± 0.5 V	_____
24	L.O. #5	Ch-4	_____	(**) ± 0.5 V	_____
25	PLLO No. 2 Lock Detect	Ch-5	_____	(**) ± 0.5 V	_____
26	PLLO No. 1 Lock Detect		_____	(***)	_____
27	L.O. #15		Ch-15	(***)	_____
				(**) ± 0.5 V	_____

(\*) Data from the printout sheet. Rewriting data on this space is optional.

(\*\*) GDO voltages from the manufacturer data sheet for S/N 101-104; DRO CH3-8 10V, GDO CH15 15V for S/N 105 and above.

(\*\*\*) Locked PLO voltage 0 to +15 V, other PLO voltage ±15.0 V; one must be locked for S/N 101-104. Locked PLO voltage 4.0 ±1.0 V, other PLO voltage 0.0 ±0.2 V, one must be locked for S/N 105 and above.  
(a) For S/N 101 through 104. (b) For S/N 105 and up.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative

Date

Quality Control

Date

**TEST DATA SHEET 36**  
Integrate/Hold and Dump Signal Verification (Paragraph 3.2.4.3.6.1)

**ATTACH PHOTOGRAPH OR PLOT HERE**

Parameter	Measured	Required	Pass/ Fail
<b>Scope Channel-1: Integration/Hold</b>			
Time Measured (A)*	ms	165 ms ± 10%	
Time Measured (B)*	ms	35 ms ± 10%	
Amplitude Measured	V	5.0 ± 0.2 V	
<b>Scope Channel-2: Dump Signal</b>			
Time Measured (D)*	ms	9 ms to 15 ms	
Amplitude Measured	ms	5.0 ± 0.2 V	

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 37  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

ATTACH PHOTOGRAPH OR PLOT HERE

Channel        03  
Frequency:        50.3 GHz

INTEGRATION (X) \*  
Measured        ms  
Required 165 ms ± 10%  
Pass/Fail       

HOLD (B-D) \*  
Measured        ms  
Required 25 ms ± 10%  
Pass/Fail       

DUMP (D) \*  
Measured        ms  
Required 9 ms to 15 ms  
Pass/Fail       

Channel        04  
Frequency:        52.8 GHz

INTEGRATION (X) \*  
Measured        ms  
Required 165 ms ± 10%  
Pass/Fail       

HOLD (B-D) \*  
Measured        ms  
Required 25 ms ± 10%  
Pass/Fail       

DUMP (D) \*  
Measured        ms  
Required 9 ms to 15 ms  
Pass/Fail       

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 38  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 05  
Frequency: \_\_\_\_\_ 53.596 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

Channel \_\_\_\_\_ 06  
Frequency: \_\_\_\_\_ 54.4 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

- Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 39  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 07  
Frequency: \_\_\_\_\_ 54.94 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms  $\pm$  10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms  $\pm$  10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

Channel \_\_\_\_\_ 08  
Frequency: \_\_\_\_\_ 55.5 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms  $\pm$  10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms  $\pm$  10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer \_\_\_\_\_ Date \_\_\_\_\_

Customer Representative  
(Flight Hardware Only)

Date

Quality Control \_\_\_\_\_ Date \_\_\_\_\_

TEST DATA SHEET 40  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 09  
Frequency: \_\_\_\_\_ 57.2903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

Channel \_\_\_\_\_ 10  
Frequency: \_\_\_\_\_ 57.2903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer      Date

Customer Representative  
(Flight Hardware Only)      Date

Quality Control      Date

TEST DATA SHEET 41  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 11  
Frequency: \_\_\_\_\_ 57.3903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

Channel \_\_\_\_\_ 12  
Frequency: \_\_\_\_\_ 57.3903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Customer Representative  
(Flight Hardware Only)

Date

Test Systems Engineer

Date

Quality Control

Date

TEST DATA SHEET 42  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 13  
Frequency: \_\_\_\_\_ 57.3903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

Channel \_\_\_\_\_ 14  
Frequency: \_\_\_\_\_ 57.3903 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer      Date

Customer Representative      Date

Quality Control      Date

TEST DATA SHEET 43  
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel \_\_\_\_\_ 15  
Frequency: \_\_\_\_\_ 89 GHz

INTEGRATION (X) \*  
Measured \_\_\_\_\_ ms  
Required 165 ms ± 10%  
Pass/Fail \_\_\_\_\_

HOLD (B-D) \*  
Measured \_\_\_\_\_ ms  
Required 25 ms ± 10%  
Pass/Fail \_\_\_\_\_

DUMP (D) \*  
Measured \_\_\_\_\_ ms  
Required 9 ms to 15 ms  
Pass/Fail \_\_\_\_\_

\* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer \_\_\_\_\_ Date \_\_\_\_\_

Quality Control \_\_\_\_\_ Date \_\_\_\_\_

Customer Representative  
(Flight Hardware Only)

Date

TEST DATA SHEET 44  
PLLO No. 1 Verification (Paragraph 3.2.4.3.6.3)  
PLLO No. 2 Verification (Paragraph 3.2.4.3.6.4)

PLLO NO. 1

PLLO No. 1 dc Level \_\_\_\_\_

Required: \*

Pass/Fail \_\_\_\_\_

PLLO NO. 2

PLLO No. 2 dc Level \_\_\_\_\_

Required: \*

Pass/Fail \_\_\_\_\_

\* -15 to +15 V dc level for S/N 101 - S/N 104,  $4.0 \pm 1.0$  V for S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_

S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 45**  
 Digital-A/GSE Mode-1 Synch Sequence,  
 Unit I.D./Serial Number and Digital-B Serial Data Verification  
 Sections [I], [II], and [III] (Paragraph 3.2.4.3.7.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		0	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	
* AMSU A1 Identification Words (data entered in decimal system)					
			Binary	Decimal	
AMSU-A1 S/N 101			00000001	1	
AMSU-A1 S/N 102			00000101	5	
AMSU-A1 S/N 103			00001001	9	
AMSU-A1 S/N 104			00001101	13	
AMSU-A1 S/N 105			00010001	17	
AMSU-A1 S/N 106			00010101	21	
AMSU-A1 S/N 107			00011001	25	
AMSU-A1 S/N 108			00011101	29	
AMSU-A1 S/N 109			00100001	33	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 46 (Sheet 1 of 2)  
Reflector Position (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.7)

3.2.4.3.7.2 Digital-A/GSE Mode-1 Reflector Position Section [IV] \*\*\*

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			
CC	354				356			
WC	694				696			

3.2.4.3.7.3 Digital-A/GSE Mode-2 Reflector Position Section [IV] \*\*\*

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0014				0016			

3.2.4.3.7.4 Digital-A/GSE Mode-3 Reflector Position Section [IV] \*\*\*

A1-1 Reflector			A1-2 Reflector		
Observed	Required**	Pass/Fail	Observed	Required**	Pass/Fail
****	****		****	****	

- \* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
- \*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.
- \*\*\* GSE Modes do not require verification or testing for PFM & FM modules
- \*\*\*\* Observe that both A1-1 and A1-2 reflectors increment one step every 8 seconds.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer \_\_\_\_\_ Date \_\_\_\_\_

Quality Control \_\_\_\_\_ Date \_\_\_\_\_

Customer Representative  
(Flight Hardware Only)

Date

**TEST DATA SHEET 46 (Sheet 2 of 2)**  
**Reflector Position (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.7)**

**3.2.4.3.7.5 Digital-A/GSE Mode-4 Reflector Position Section [IV] \*\*\***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
30	1000				1002			

**3.2.4.3.7.6 Digital-A/GSE Mode-5 Reflector Position Section [IV] \*\*\***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			

**3.2.4.3.7.7 Digital-A/GSE Mode-7 Reflector Position Section [IV] \*\*\***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.  
 \*\* Required range for instrument serial number from TDS 6 of AE-26002/1  $\pm 10$  counts. Rewriting range on this data sheet is optional.  
 \*\*\* GSE Modes do not require verification or testing for PFM & FM modules

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Quality Control

Date

Customer Representative  
(Flight Hardware Only)

Date

AE-26156/3B  
10 Mar 99

TEST DATA SHEET 47  
Digital-A/GSE Mode-1 Radiometer Data Section [V] (Paragraph 3.2.4.3.7.2)

BP	A1-1 Reflector			A1-2 Reflector		
	Channel-3*	Required**	Pass/Fail	Channel-9*	Required**	Pass/Fail
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

\* Actual counts from computer printout. Rewriting counts on this data sheet is optional.  
\*\* Required =  $16,500 \pm 4000$  counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 48** (Sheet 1 of 2)  
Digital-A/GSE Mode-1 Temperature Sensors Section [VI] (Paragraph 3.2.4.3.7.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

\* Value is from the STE printout sheets. Copying data to this sheet is optional.

\*\* For S/N 101 through 104.

\*\*\* For S/N 105 and up.

(Continued on Sheet 2)

**TEST DATA SHEET 48 (Sheet 2 of 2)**  
Digital-A/GSE Mode-1 Temperature Sensors Section [VI] (Paragraph 3.2.4.3.7.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

- \* Value is from the STE printout sheets. Copying data to this sheet is optional.
- \*\* = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 49  
Receiver Input Signals (Paragraph 3.2.4.4.1)

CH 9 through 14 PLLO	PRT Temp (°C)		Measured * Frequency	Requirements **	Pass/ Fail
PLLO No. 1	PLO No. 1	Xtal *** Osc.			
				57290.334 MHz ± 50 kHz	
PLLO No. 2	PLO No. 2	Xtal *** Osc.		57290.334 MHz ± 50 kHz	

\* Attach spectrum analyzer plots.

\*\* = At 18°C

\*\*\* PRT not connected on S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

**TEST DATA SHEET 50** (Sheet 1 of 2)  
Radiometer "Relative" NEΔT Verification\* (Paragraph 3.2.4.4.2.2)

Channels 3, 4, 5, 6, 7, 8, and 15. PLL No. 1 (Channels 9 through 14)

Channel Number>	3	4	5	6
NEΔT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEΔT (Specified) K **	0.40	0.25	0.25	0.25
Channel Number>	7	8	9	10
NEΔT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEΔT (Specified) K **	0.25	0.25	0.25	0.40
Channel Number>	11	12	13	14
NEΔT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEΔT (Specified) K **	0.40	0.60	0.80	1.20
Channel Number>	15			
NEΔT (Average of 5 data)	_____			
Pass/Fail	_____			
NEΔT (Specified) K **	0.50			

\* Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria

\*\* For reference only

Circle Test: CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720    Shop Order: \_\_\_\_\_    S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 50 (Sheet 2 of 2)  
Radiometer "Relative" NEΔT Verification\* (Paragraph 3.2.4.4.2.2)

PLLO No. 2 (Channels 9 through 14)

Channel Number>	9	10	11	12
NEΔT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEΔT (Specified) K **	0.25	0.40	0.40	0.60
Channel Number>	13	14		
NEΔT (Average of 5 data)	_____	_____		
Pass/Fail	_____	_____		
NEΔT (Specified) K **	0.80	1.20		

- Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria
- For reference only

Circle Test: CPT    LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 51 (Sheet 1 of 2)  
Transient Susceptibility Test (Paragraph 3.2.4.2.1.4, 3.2.4.2.2.9, 3.2.4.2.3.3)

Test Setup Verified: \_\_\_\_\_  
Signature

3.2.4.2.1.4: +28V Main Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.2.1.4.2	8	Low frequency in accordance with Figure 8		
3.2.4.2.1.4.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.1.4.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.1.4.3	10	High frequency 6.67 Hz 1.50 V p-p		

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 51 (Sheet 2 of 2)  
Transient Susceptibility Test (Paragraph 3.2.4.2.1.4, 3.2.4.2.2.9, 3.2.4.2.3.3)

Test Setup Verified: \_\_\_\_\_  
Signature

3.2.4.2.2.9: +28V Pulse Load Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.2.2.9.2	8	Low frequency in accordance with Figure 13		
3.2.4.2.2.9.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.2.9.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.2.9.3	10	High frequency 6.67 Hz 1.50 V p-p		

3.2.4.2.3.3: +28V Analog Telemetry Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/ Observations
3.2.4.2.3.3.2	8	Low frequency in accordance with Figure 16		
3.2.4.2.3.3.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.3.3.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.3.3.3	10	High frequency 6.67 Hz 1.50 V p-p		

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer

Date

Quality Control

Date

Customer Representative  
(ight Hardware Only)

Date

TEST DATA SHEET 52 (Sheet 1 of 2)  
Instrument Feedback Tests (Paragraph 3.2.4.2.1.3, 3.2.4.2.2.8, 3.2.4.2.3.2, 3.2.4.2.4.2)

3.2.4.2.1.3: +28V Main Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.1.3.1	7	Load current ripple	<150 mA p-p	Value: _____	

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720      Shop Order: \_\_\_\_\_      S/N: \_\_\_\_\_

Test Systems Engineer

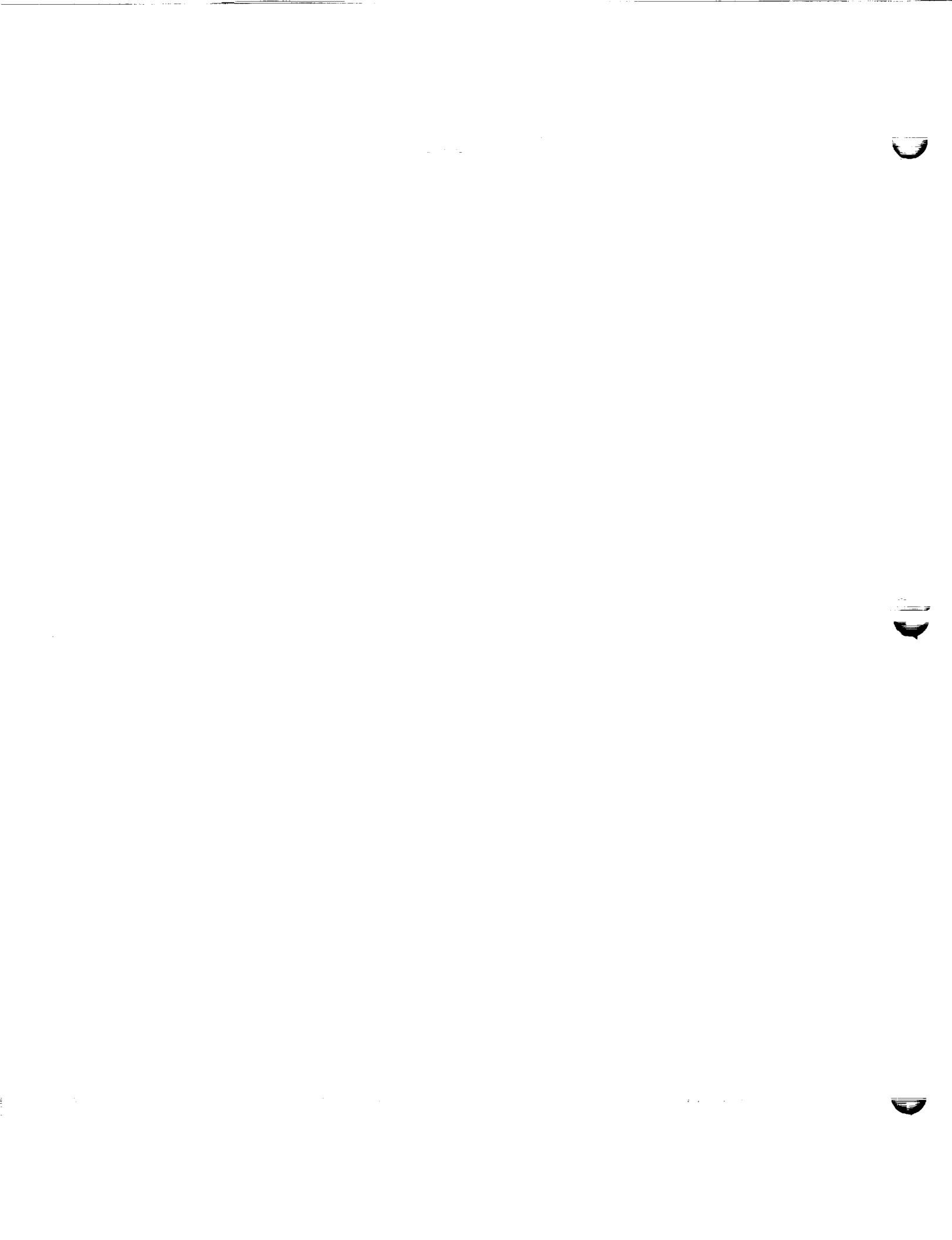
Date

Customer Representative  
(Flight Hardware Only)

Date

Quality Control

Date



TEST DATA SHEET 53  
Channel Identification Test (Paragraph 3.2.4.5)

Channel Number	Antenna Location	Sweeper Freq. Setting (GHz)	Polarization (H/V)	Radiometric Data Counts Δ Counts	Channel Verified (Yes/No)
3	A1-2	50.35	V		
4	A1-2	52.85	V		
5	A1-2	53.70	H		
6	A1-1	54.45	H		
7	A1-1	54.99	V		
8	A1-2	55.55	H		
9	A1-1	57.34	H		
10	A1-1	57.50	H		
11	A1-1	57.564	H		
12	A1-1	57.59	H		
13	A1-1	57.602	H		
14	A1-1	57.608	H		
15	A1-1	89.55	V		

Circle Test: CPT LPT

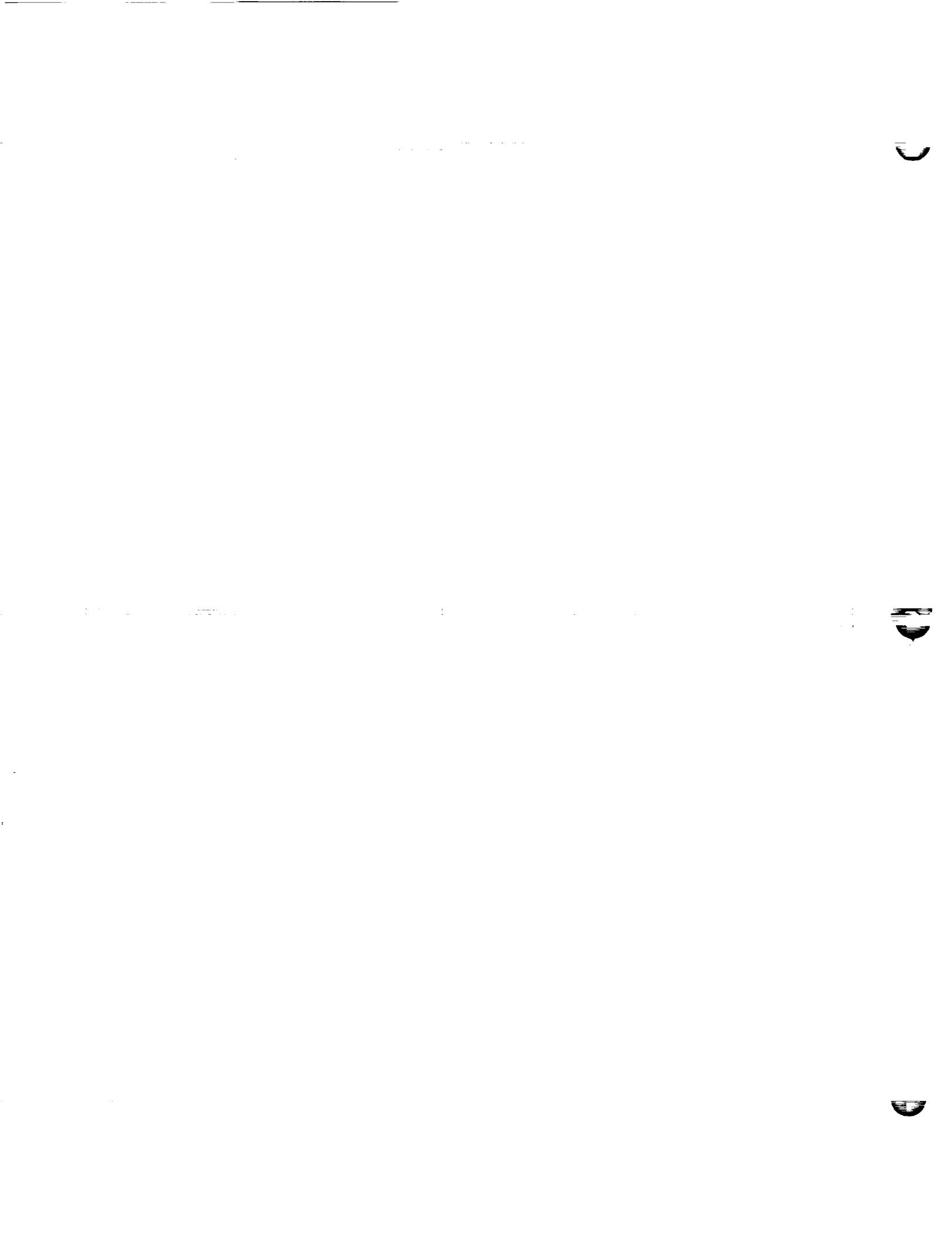
METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: \_\_\_\_\_ S/N: \_\_\_\_\_

Test Systems Engineer \_\_\_\_\_ Date \_\_\_\_\_

Customer Representative  
(Flight Hardware Only) \_\_\_\_\_ Date \_\_\_\_\_

Quality Control \_\_\_\_\_ Date \_\_\_\_\_



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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
4. TITLE AND SUBTITLE  Integrated Advanced Microwave Sounding Unit-A (AMSU-A), Performance Verification Report		5. FUNDING NUMBERS  NAS 5-32314	
6. AUTHOR(S)  R. Platt			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Aerojet 1100 W. Hollyvale Azusa, CA 91702		8. PERFORMING ORGANIZATION REPORT NUMBER  11428 March 1999	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  NASA Goddard Space Flight Center Greenbelt, Maryland 20771		10. SPONSORING/MONITORING AGENCY REPORT NUMBER  ---	
11. SUPPLEMENTARY NOTES  ---			
12a. DISTRIBUTION/AVAILABILITY STATEMENT  ---		12b. DISTRIBUTION CODE  ---	
13. ABSTRACT (Maximum 200 words)  This is the Performance Verification Report, Final Comprehensive Performance Test Report, P/N 1331720-2-TST, S/N 105/A1, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).			
14. SUBJECT TERMS  EOS Microwave System			15. NUMBER OF PAGES  ---
			16. PRICE CODE  ---
17. SECURITY CLASSIFICATION OF REPORT  Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE  Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT  Unclassified	20. LIMITATION OF ABSTRACT  SAR

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Performance Verification Report

 Final Comprehensive Performance Test Report, P/N 1331720-2-TST,  
 S/N 105/A1

**DOCUMENT NO.**

 Report 11428  
 March 1999

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 208

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Product Team Leader (A. Nieto)

8341

3/19/99

Systems Engineer (R. Platt)

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Design Assurance (E. Lorenz)

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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	March 1999	Contractor Report	
4. TITLE AND SUBTITLE	Integrated Advanced Microwave Sounding Unit-A (AMSU-A) Performance Verification Report		5. FUNDING NUMBERS
6. AUTHOR(S)	R. Platt		NAS5-32314
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS (ES)	Aerojet 1100 W. Hollyvale Azusa, CA 91702		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS (ES)	National Aeronautics and Space Administration Washington, DC 20546-0001		10. SPONSORING / MONITORING AGENCY REPORT NUMBER
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12a. DISTRIBUTION / AVAILABILITY STATEMENT	Unclassified–Unlimited Subject Category:19 Report available from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076-1320. (301) 621-0390.		12b. DISTRIBUTION CODE
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